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(54) ACCELERATED PROCESS IMPROVEMENT FRAMEWORK

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(60) Provisional application No. 60/399,459, filed on Jul. 31, 2002.

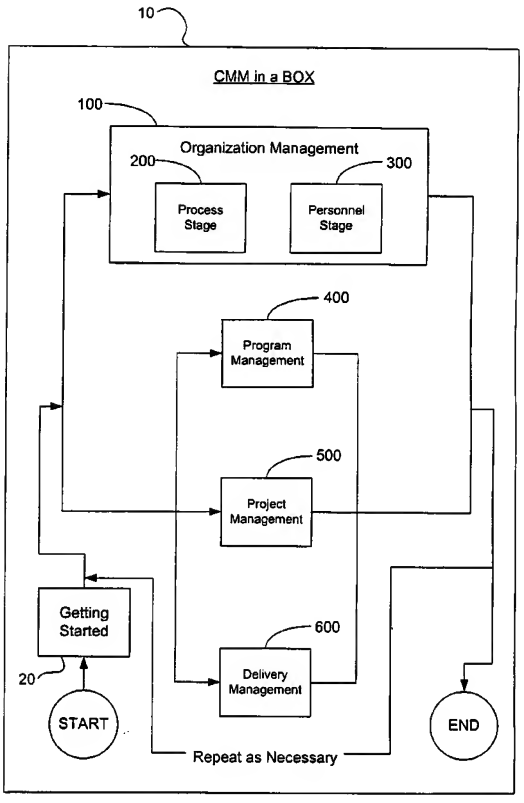
Publication Classification

(51) **Int. Cl.**
G06F 17/60 (2006.01)

(52) **U.S. Cl.** **705/7**

(57) **ABSTRACT**

The present invention relates to a method and related system for assisting and expediting an organization production of a more mature product. The method and system may include implementation of processes using a combination of both electronic hardware and software and implementation locally or over a network such as an intranet or the Internet. In another embodiment, the method may be implemented using a document management system to administer files related to the steps in the method. These files may assist a user in the creation of required documentation. A document management tool may be integrated with the document management system to associate documentation with steps in the method. A navigator tool may be employed to create a graphical display of the steps in the method using data contained in the files. Another embodiment of the present invention uses WebDAV-based communication to coordinate access to multiple document repositories.



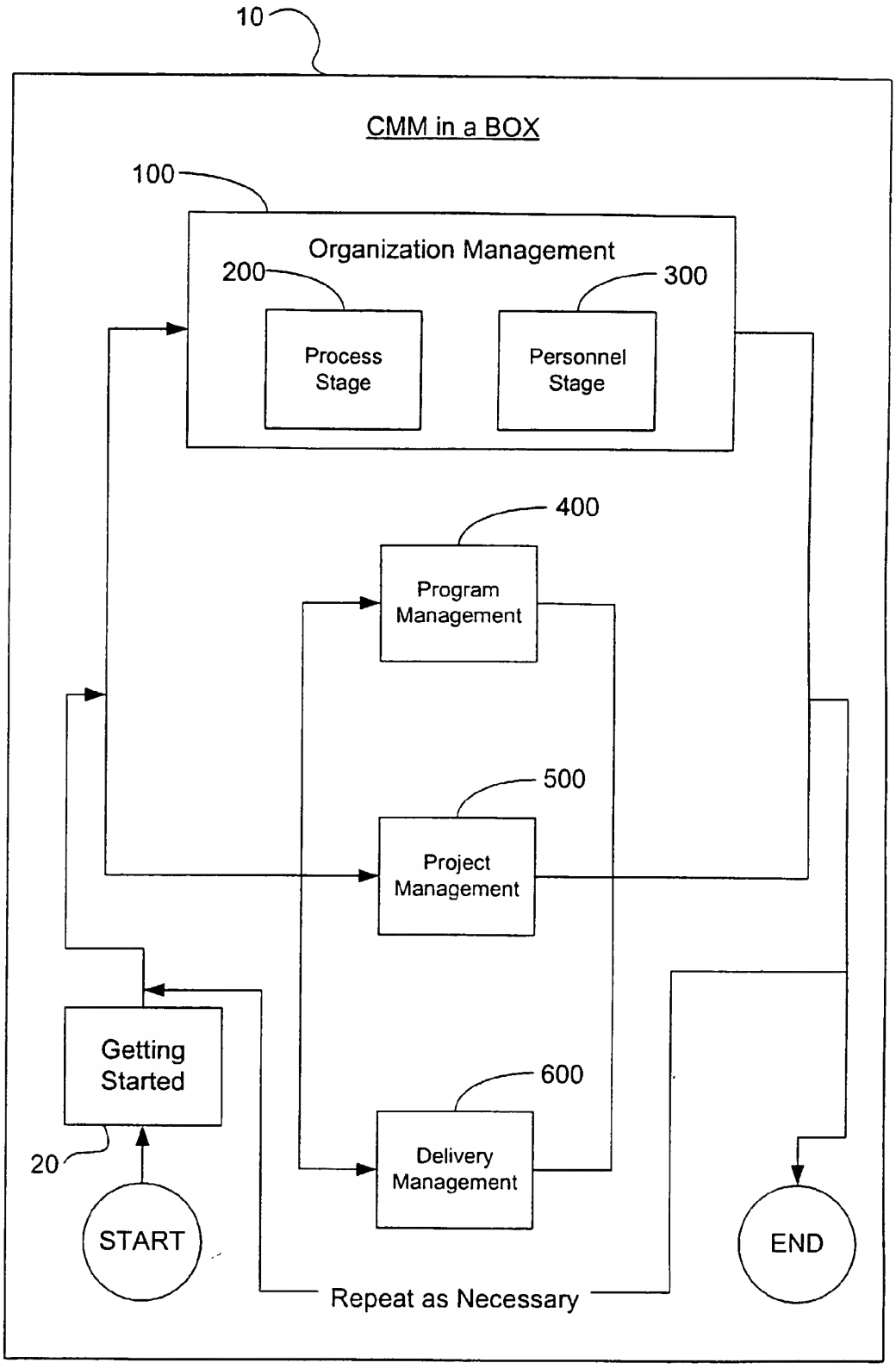

10
CMM in a BOX
100
Organization Management
200
Process Stage
300
Personnel Stage
400
Program Management
500
Project Management
600
Delivery Management
Getting Started
20
START
END
Repeat as Necessary

Fig. 1

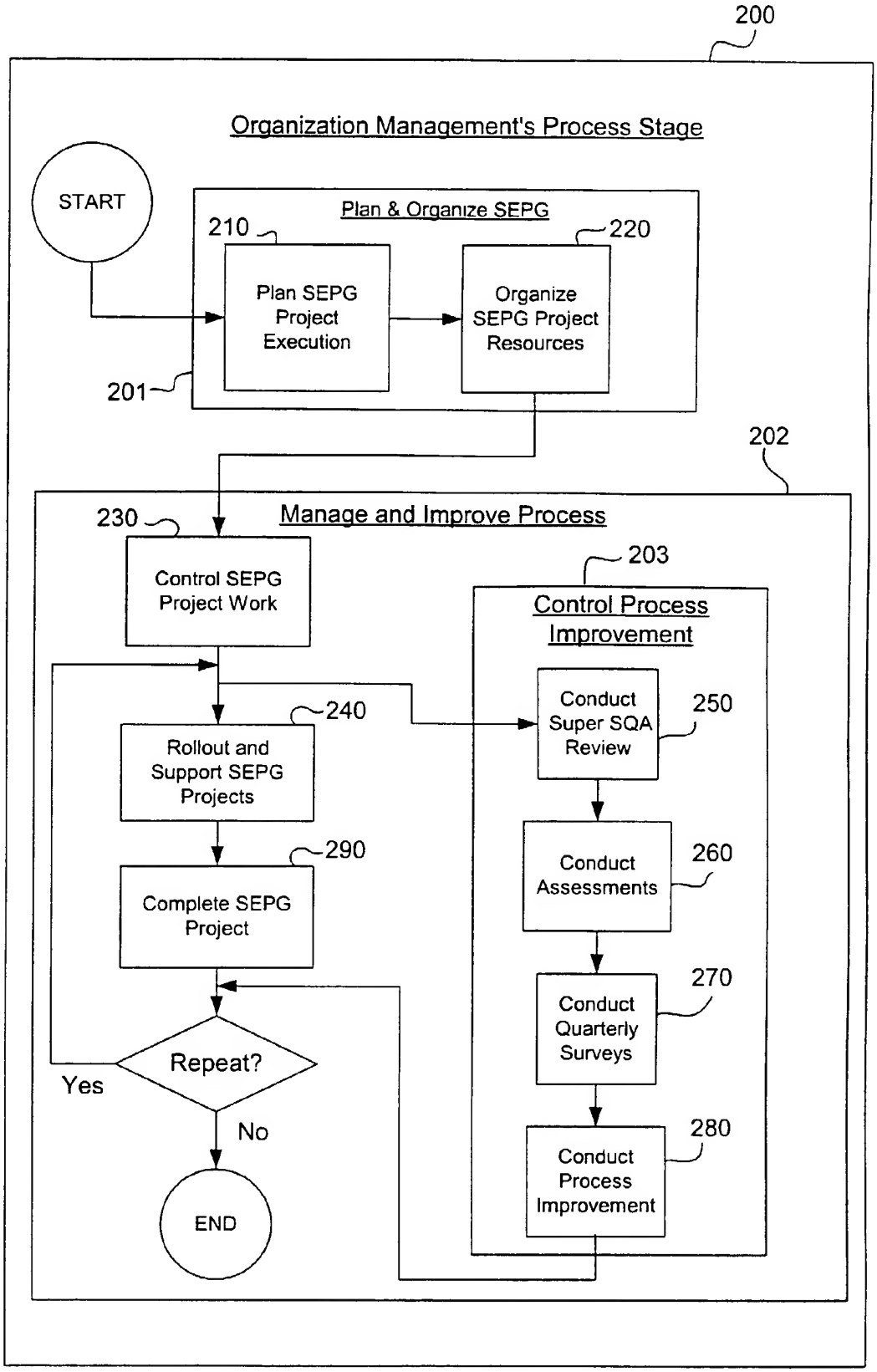

200
Organization Management's Process Stage
START
Plan & Organize SEPG
210
220
Plan SEPG Project Execution
Organize SEPG Project Resources
201
202
230
Manage and Improve Process
Control SEPG Project Work
203
Control Process Improvement
Conduct Super SQA Review
250
240
Rollout and Support SEPG Projects
Conduct Assessments
260
290
Complete SEPG Project
270
Conduct Quarterly Surveys
Repeat?
Yes
No
280
Conduct Process Improvement
END

Fig. 2A

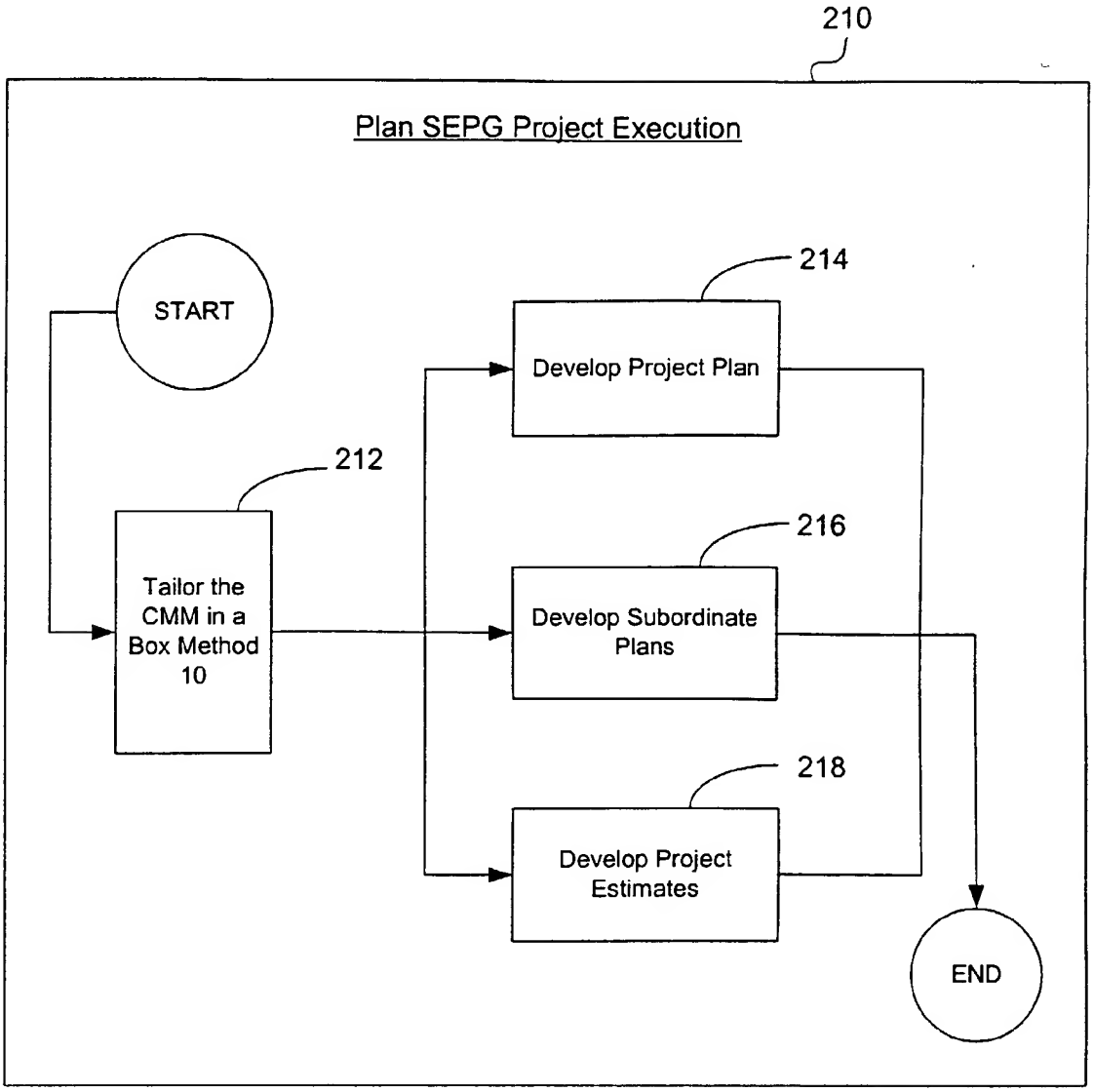

210
Plan SEPG Project Execution
START
212
Tailor the CMM in a Box Method 10
214
Develop Project Plan
216
Develop Subordinate Plans
218
Develop Project Estimates
END

Fig. 2B

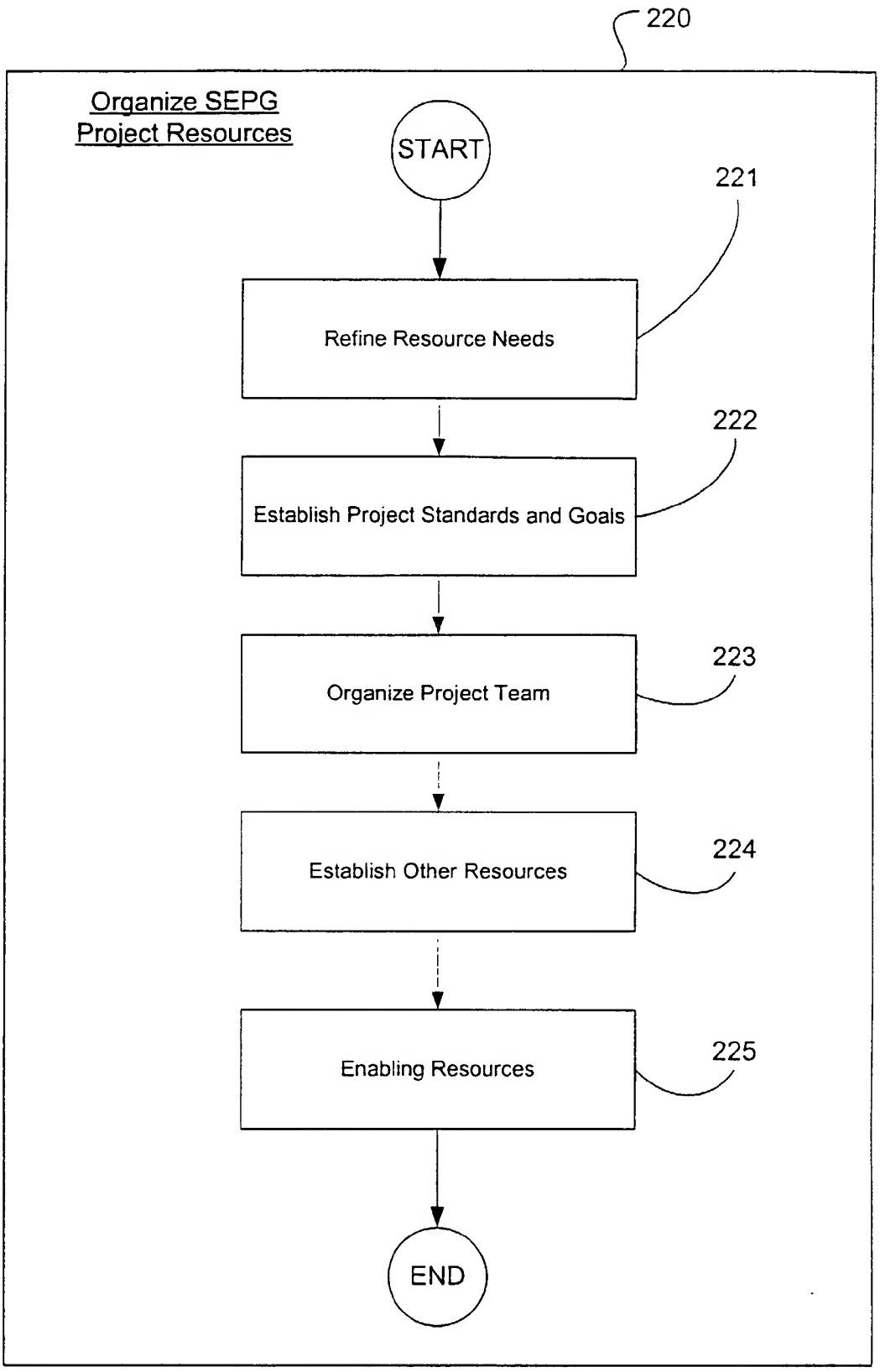

220
Organize SEPG Project Resources
START
221
Refine Resource Needs
222
Establish Project Standards and Goals
223
Organize Project Team
224
Establish Other Resources
225
Enabling Resources
END

Fig. 2C

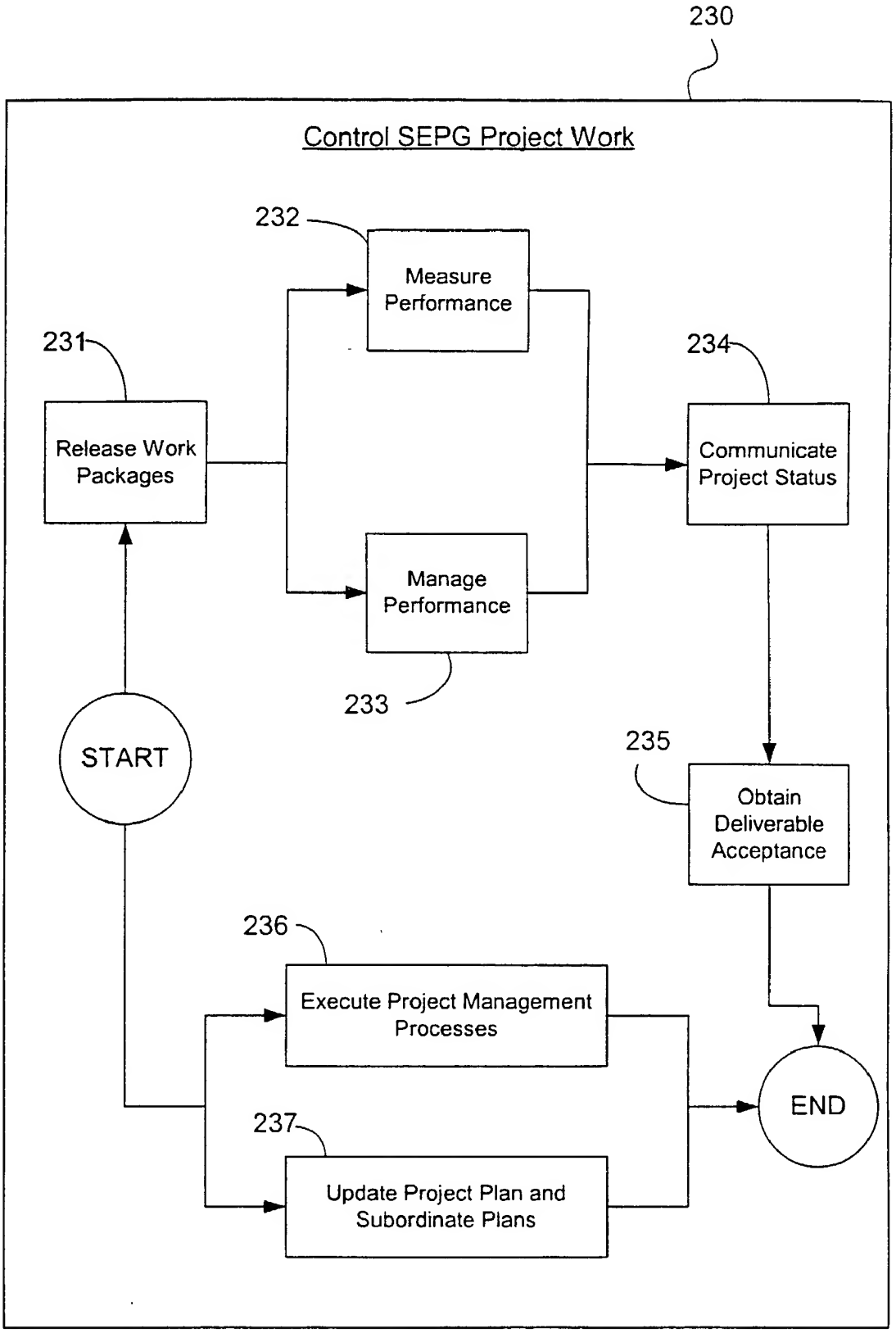

230
Control SEPG Project Work
232
Measure Performance
231
234
Release Work Packages
Communicate Project Status
Manage Performance
233
START
235
Obtain Deliverable Acceptance
236
Execute Project Management Processes
END
237
Update Project Plan and Subordinate Plans

Fig. 2D

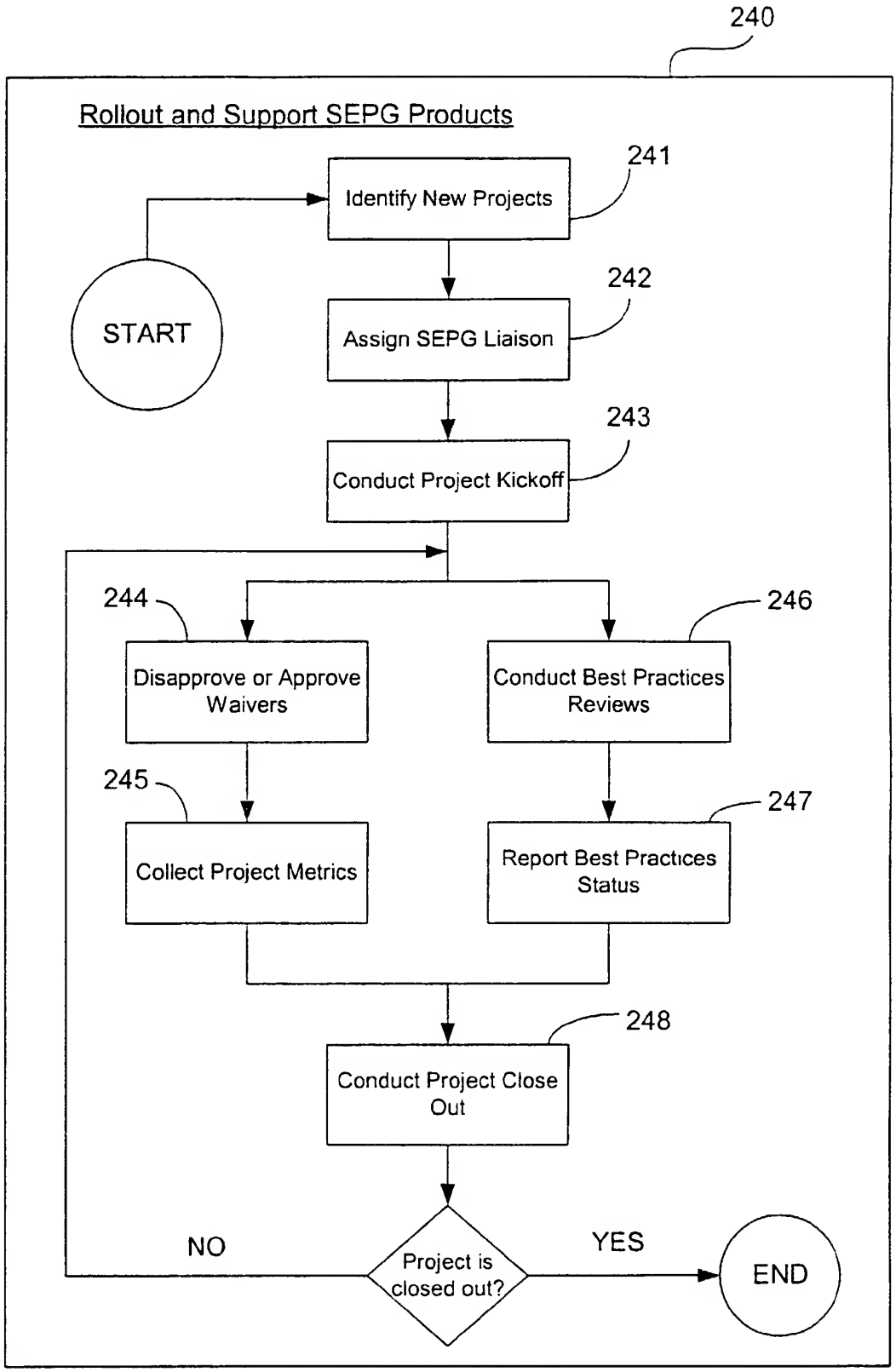

240
Rollout and Support SEPG Products
241
Identify New Projects
START
242
Assign SEPG Liaison
243
Conduct Project Kickoff
244
246
Disapprove or Approve Waivers
Conduct Best Practices Reviews
245
247
Collect Project Metrics
Report Best Practices Status
248
Conduct Project Close Out
NO
Project is closed out?
YES
END

Fig. 2E

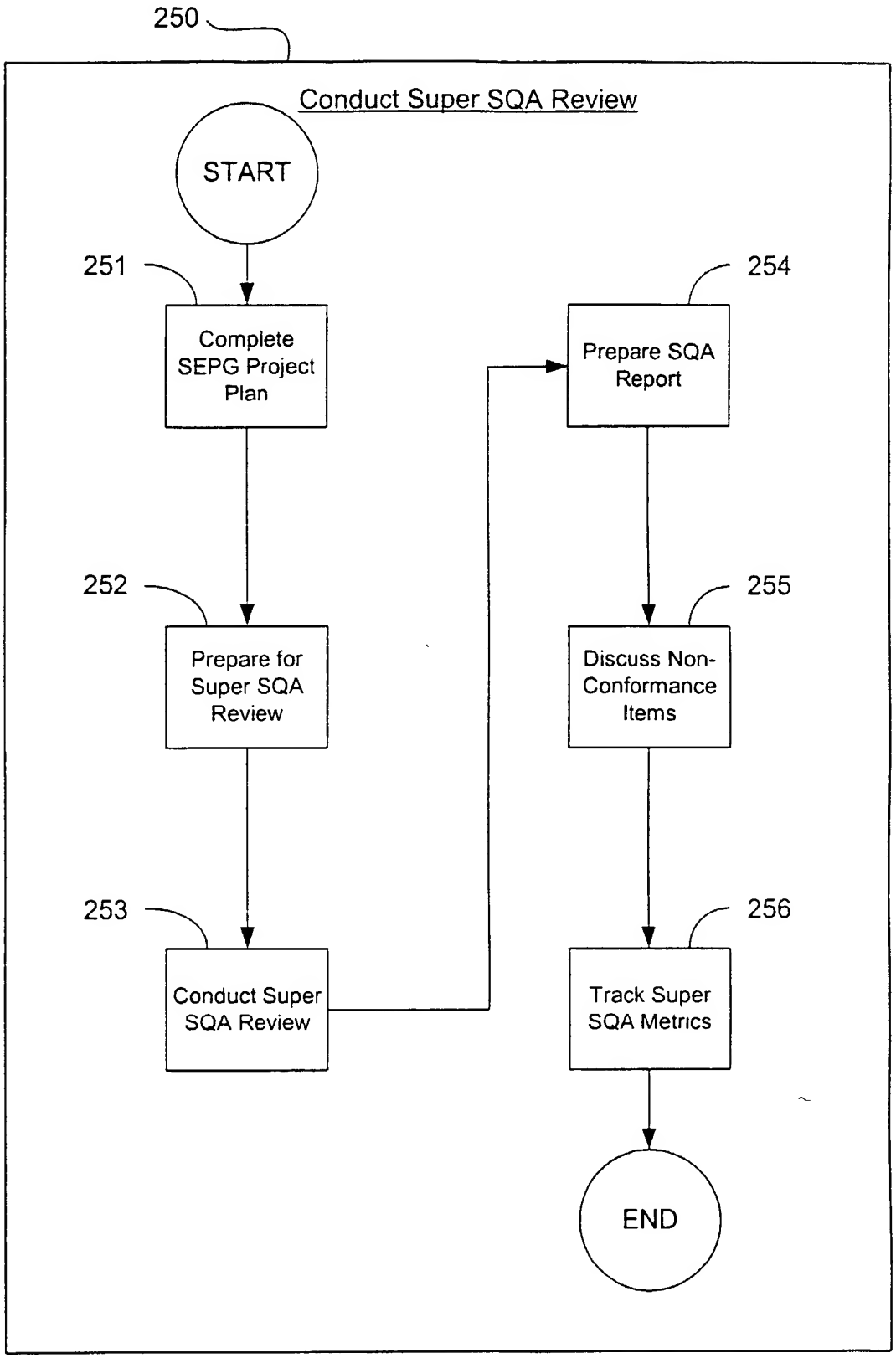

250
Conduct Super SQA Review
START
251
Complete SEPG Project Plan
252
Prepare for Super SQA Review
253
Conduct Super SQA Review
254
Prepare SQA Report
255
Discuss Non-Conformance Items
256
Track Super SQA Metrics
END

Fig. 2F

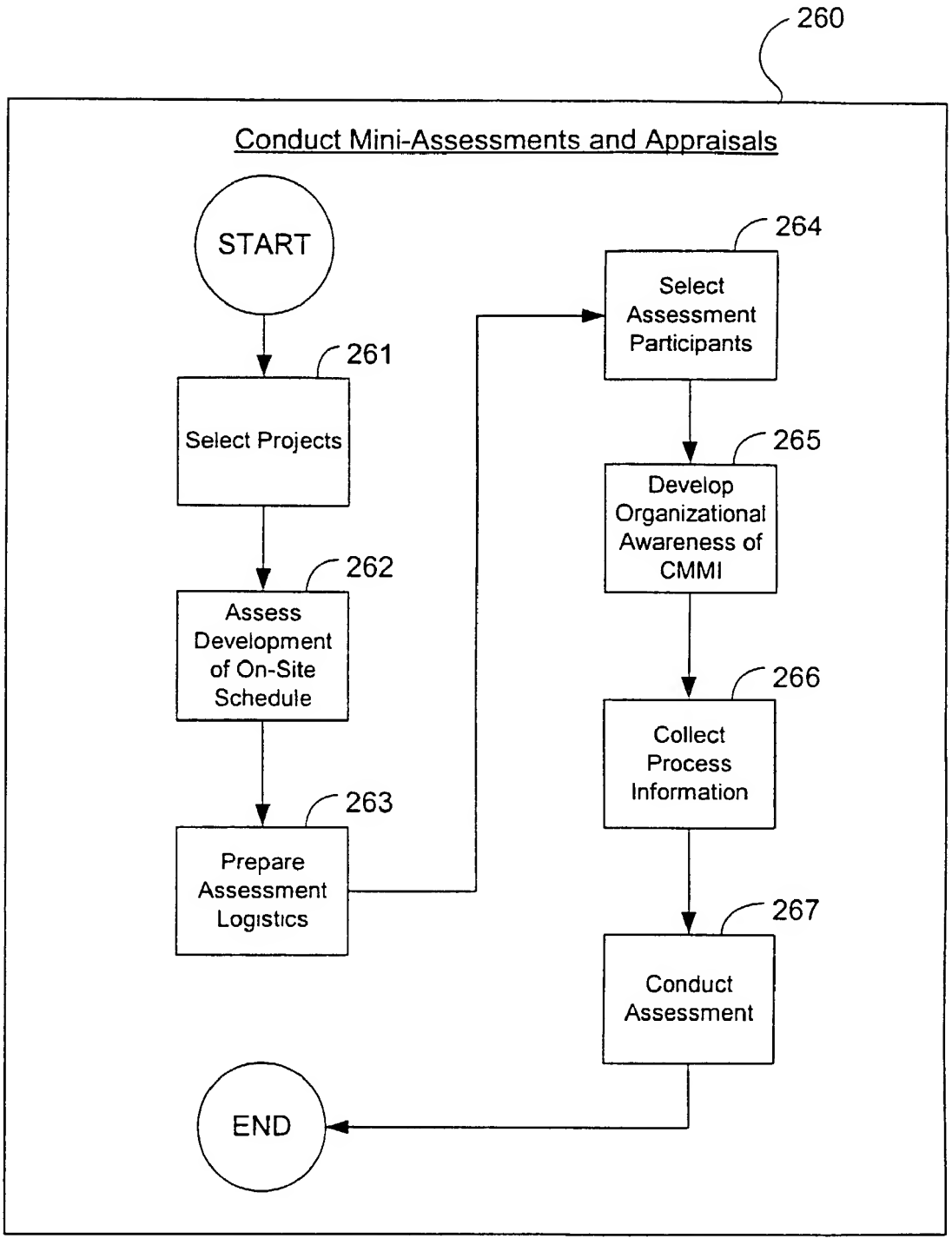

260
Conduct Mini-Assessments and Appraisals
START
261
Select Projects
262
Assess Development of On-Site Schedule
263
Prepare Assessment Logistics
264
Select Assessment Participants
265
Develop Organizational Awareness of CMMI
266
Collect Process Information
267
Conduct Assessment
END

Fig. 2G

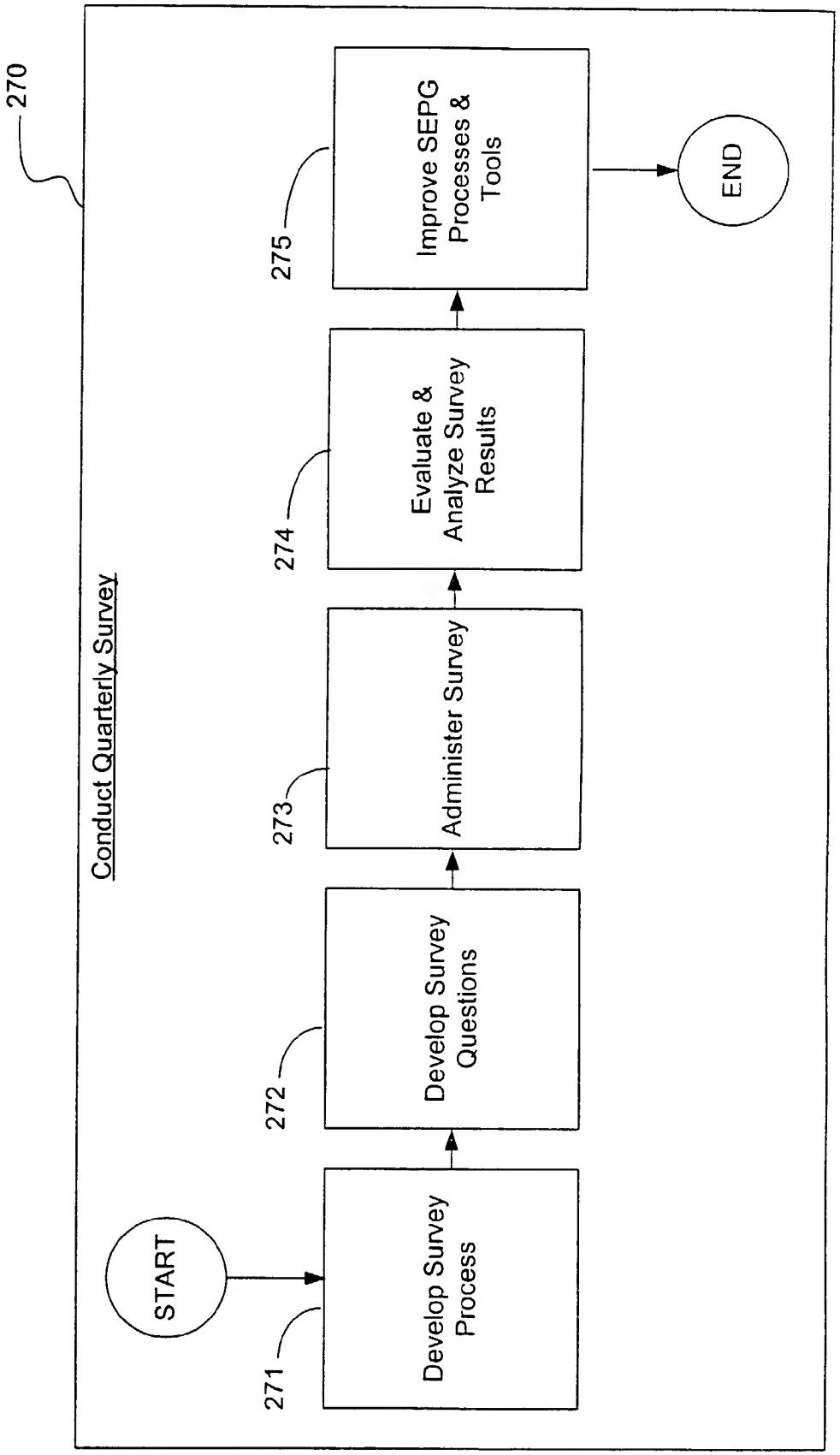

270
Conduct Quarterly Survey
START
271
Develop Survey Process
272
Develop Survey Questions
273
Administer Survey
274
Evaluate & Analyze Survey Results
275
Improve SEPG Processes & Tools
END

Fig. 2H

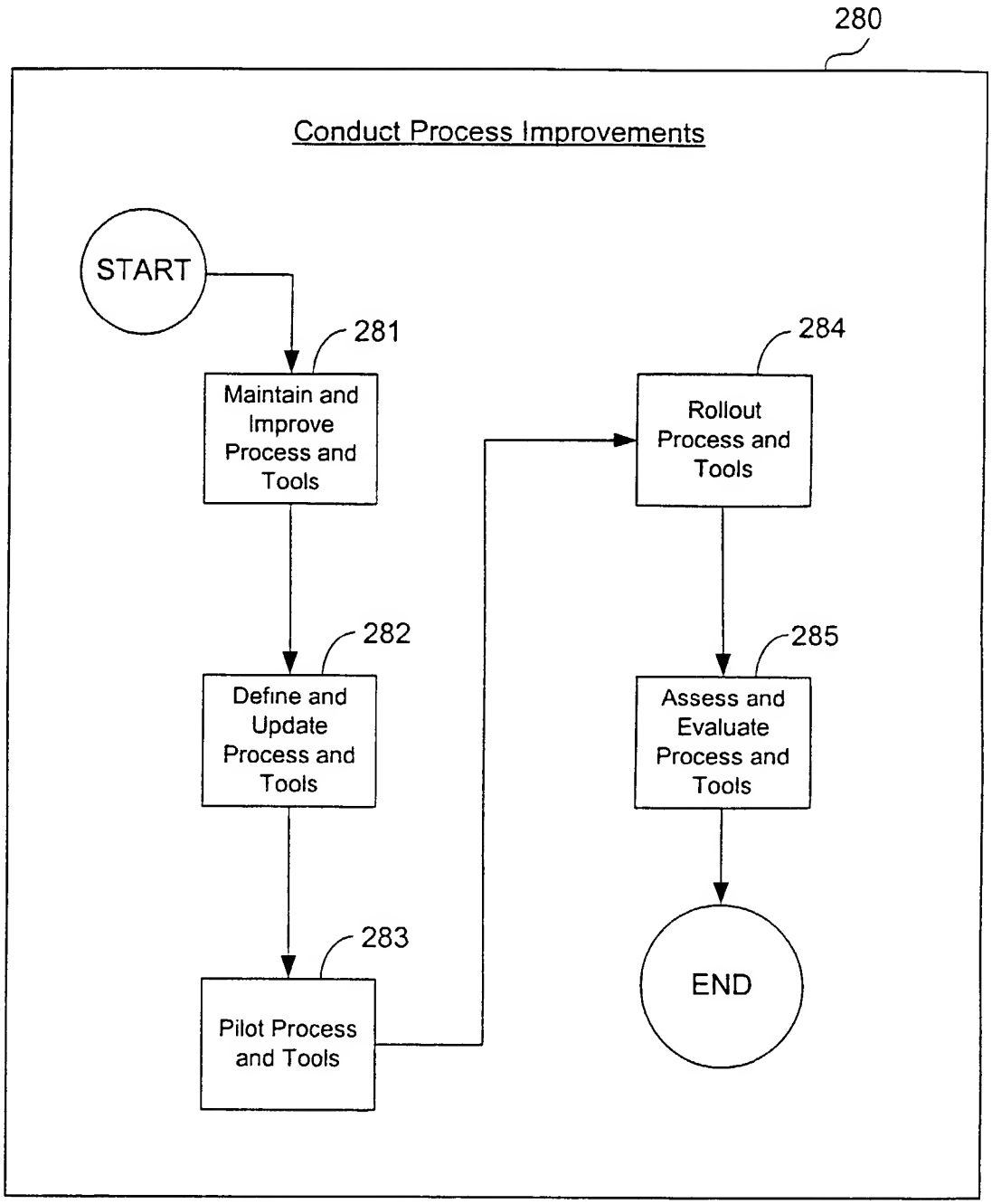

280
Conduct Process Improvements
START
281
Maintain and Improve Process and Tools
282
Define and Update Process and Tools
283
Pilot Process and Tools
284
Rollout Process and Tools
285
Assess and Evaluate Process and Tools
END

Fig. 2I

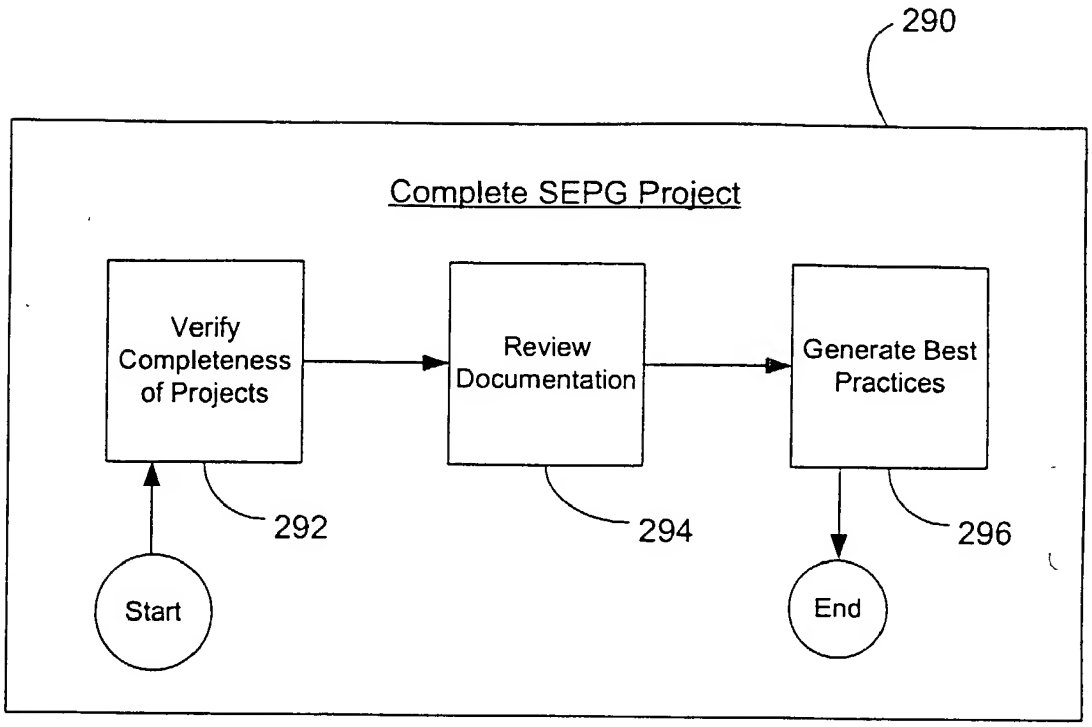

290
Complete SEPG Project
Verify Completeness of Projects
Review Documentation
Generate Best Practices
292
294
296
Start
End

Fig. 2J

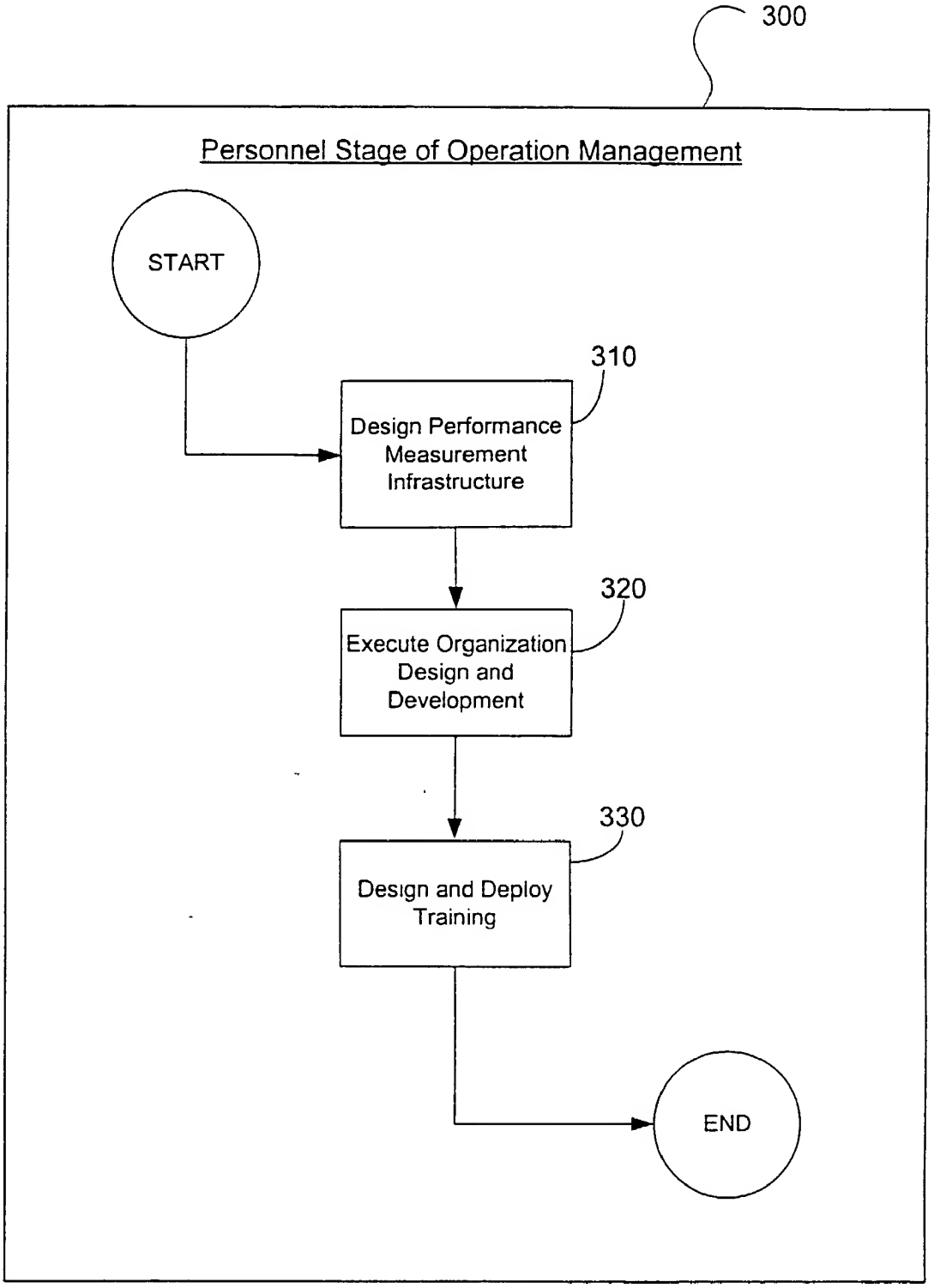

300
Personnel Stage of Operation Management
START
310
Design Performance Measurement Infrastructure
320
Execute Organization Design and Development
330
Design and Deploy Training
END

Fig. 3A

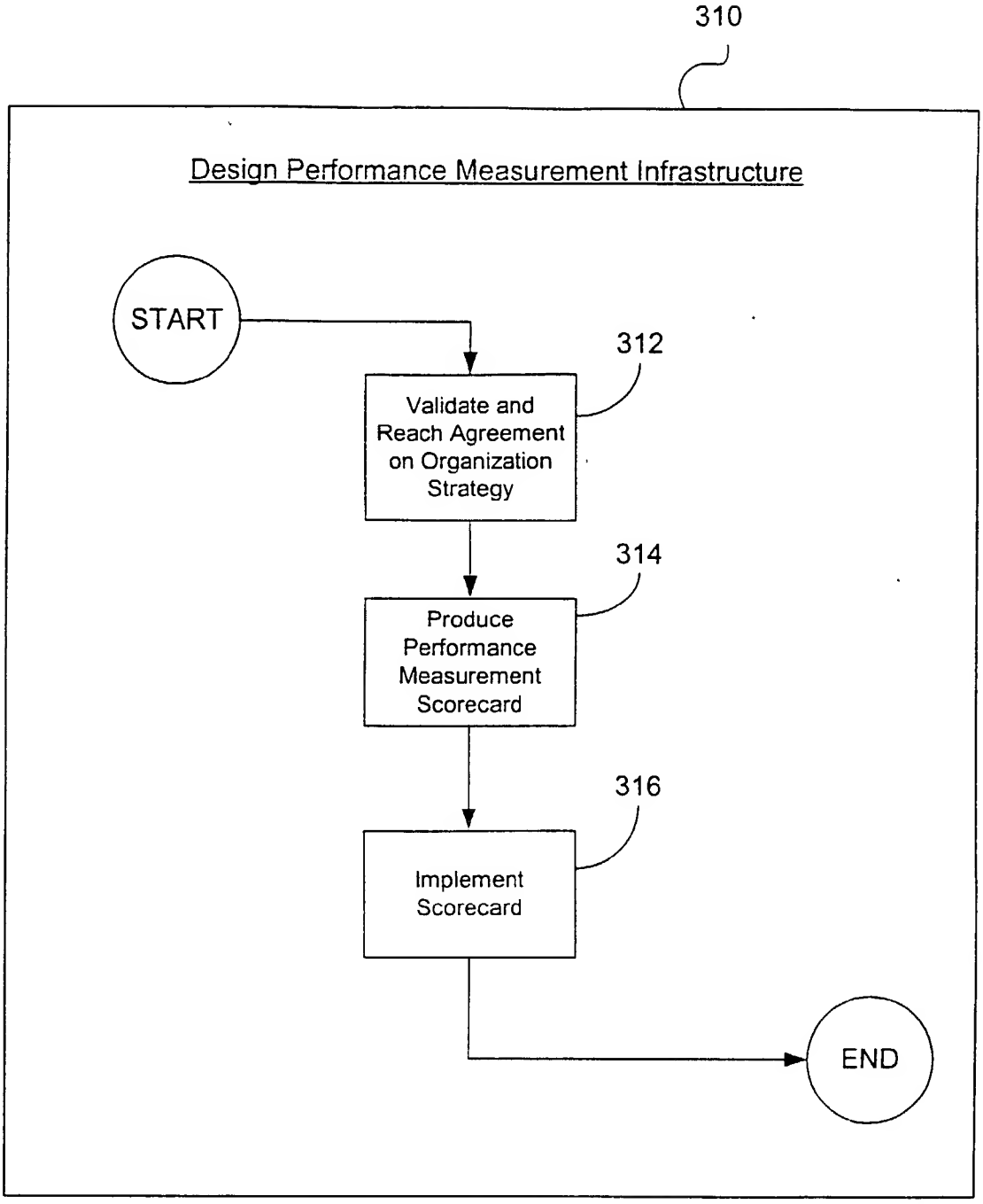

310
Design Performance Measurement Infrastructure
START
312
Validate and Reach Agreement on Organization Strategy
314
Produce Performance Measurement Scorecard
316
Implement Scorecard
END

Fig. 3B

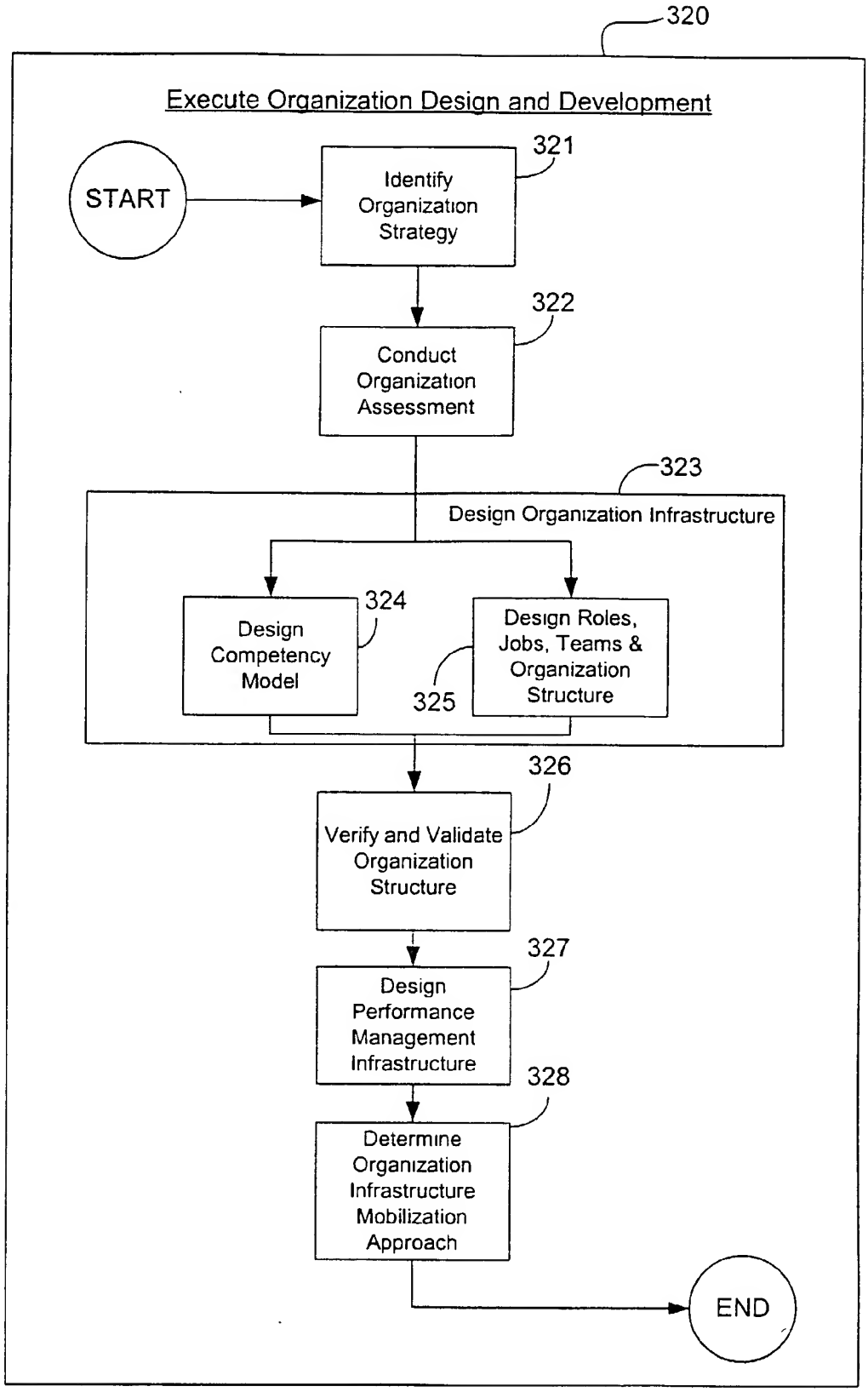

320
Execute Organization Design and Development
START
321
Identify Organization Strategy
322
Conduct Organization Assessment
323
Design Organization Infrastructure
324
Design Competency Model
325
Design Roles, Jobs, Teams & Organization Structure
326
Verify and Validate Organization Structure
327
Design Performance Management Infrastructure
328
Determine Organization Infrastructure Mobilization Approach
END

Fig. 3C

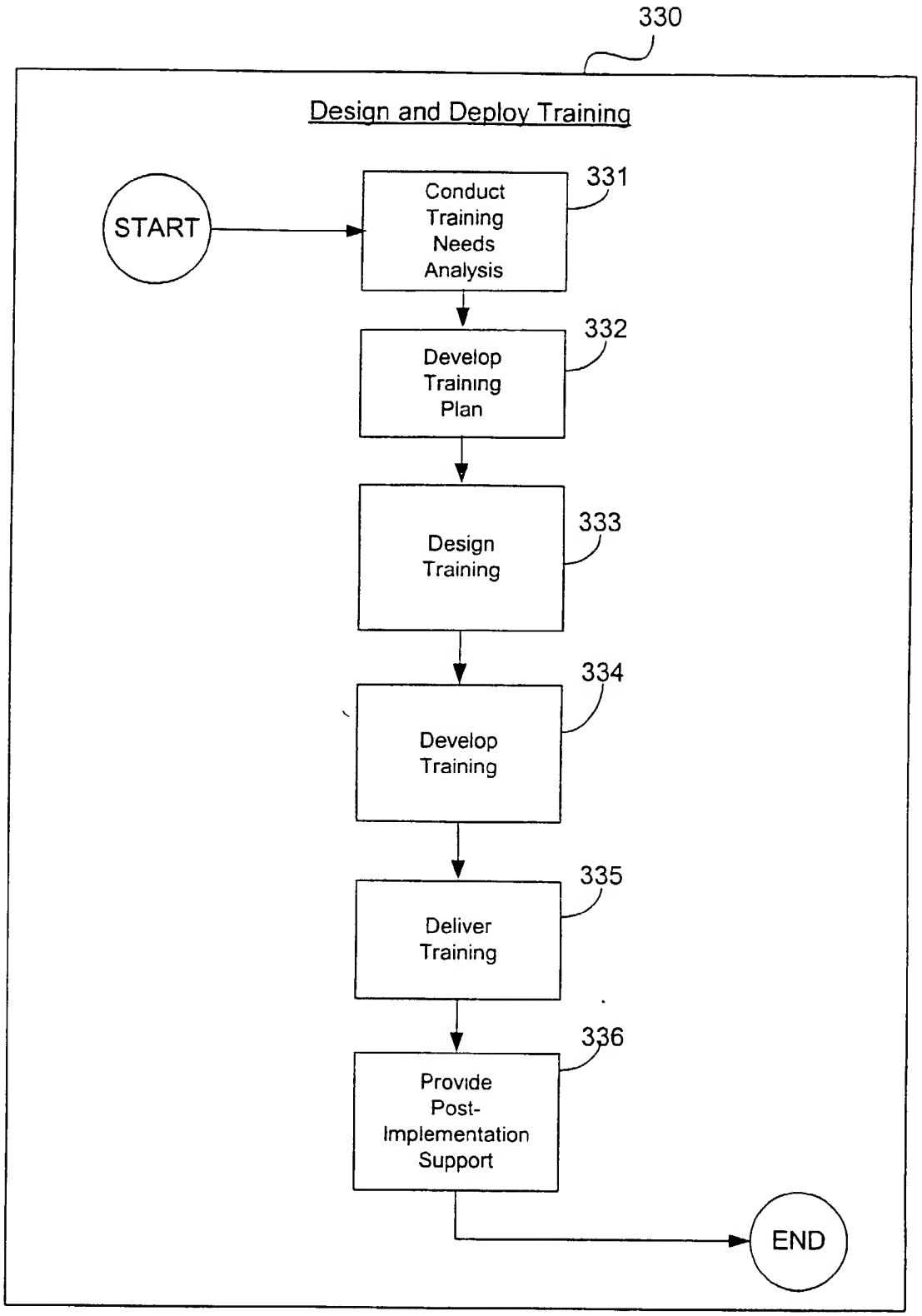

330
Design and Deploy Training
START
Conduct Training Needs Analysis
331
Develop Training Plan
332
Design Training
333
Develop Training
334
Deliver Training
335
Provide Post-Implementation Support
336
END

Fig. 3D

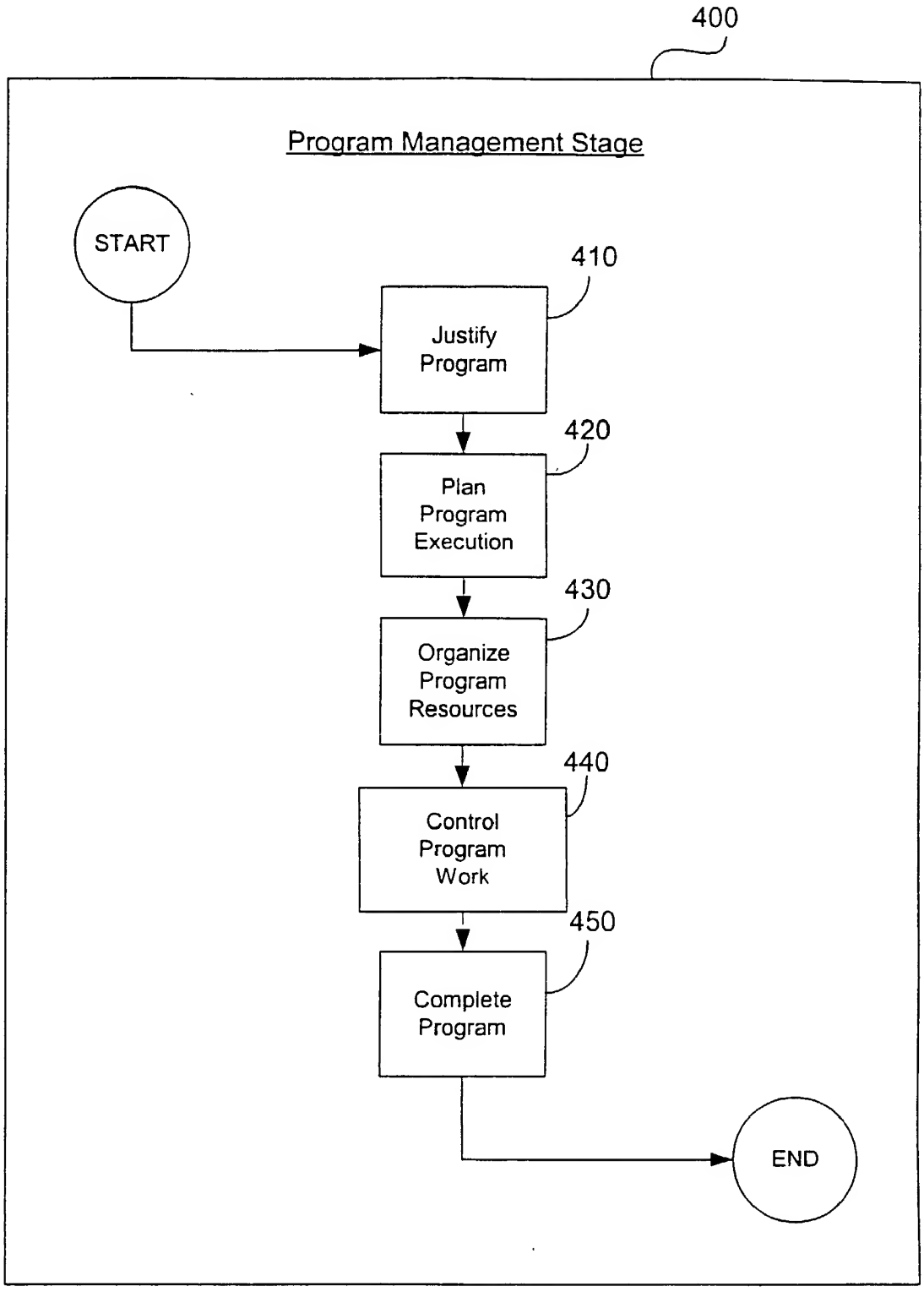

400
Program Management Stage
START
410
Justify Program
420
Plan Program Execution
430
Organize Program Resources
440
Control Program Work
450
Complete Program
END

Fig. 4A

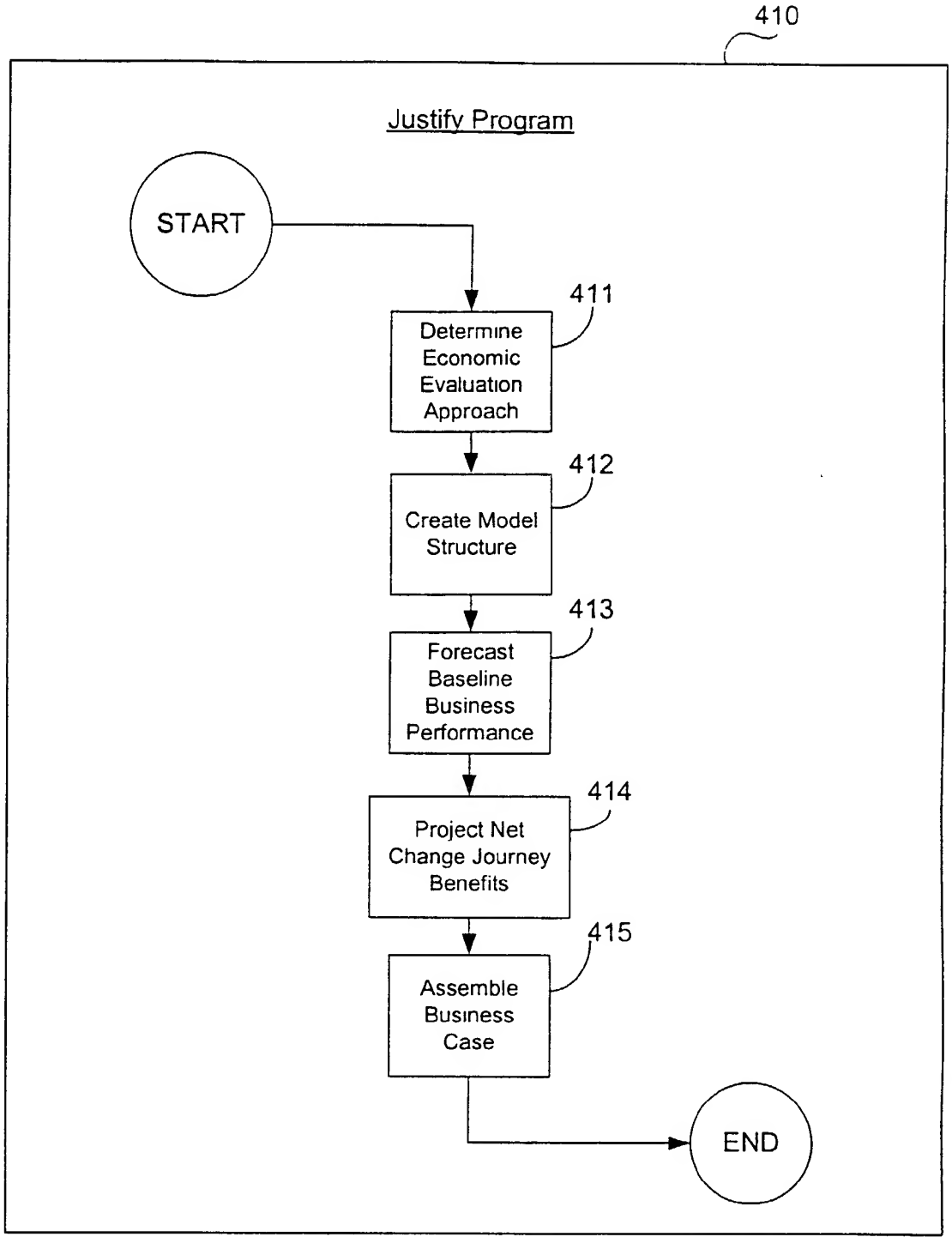

410
Justify Program
START
411
Determine Economic Evaluation Approach
412
Create Model Structure
413
Forecast Baseline Business Performance
414
Project Net Change Journey Benefits
415
Assemble Business Case
END

Fig. 4B

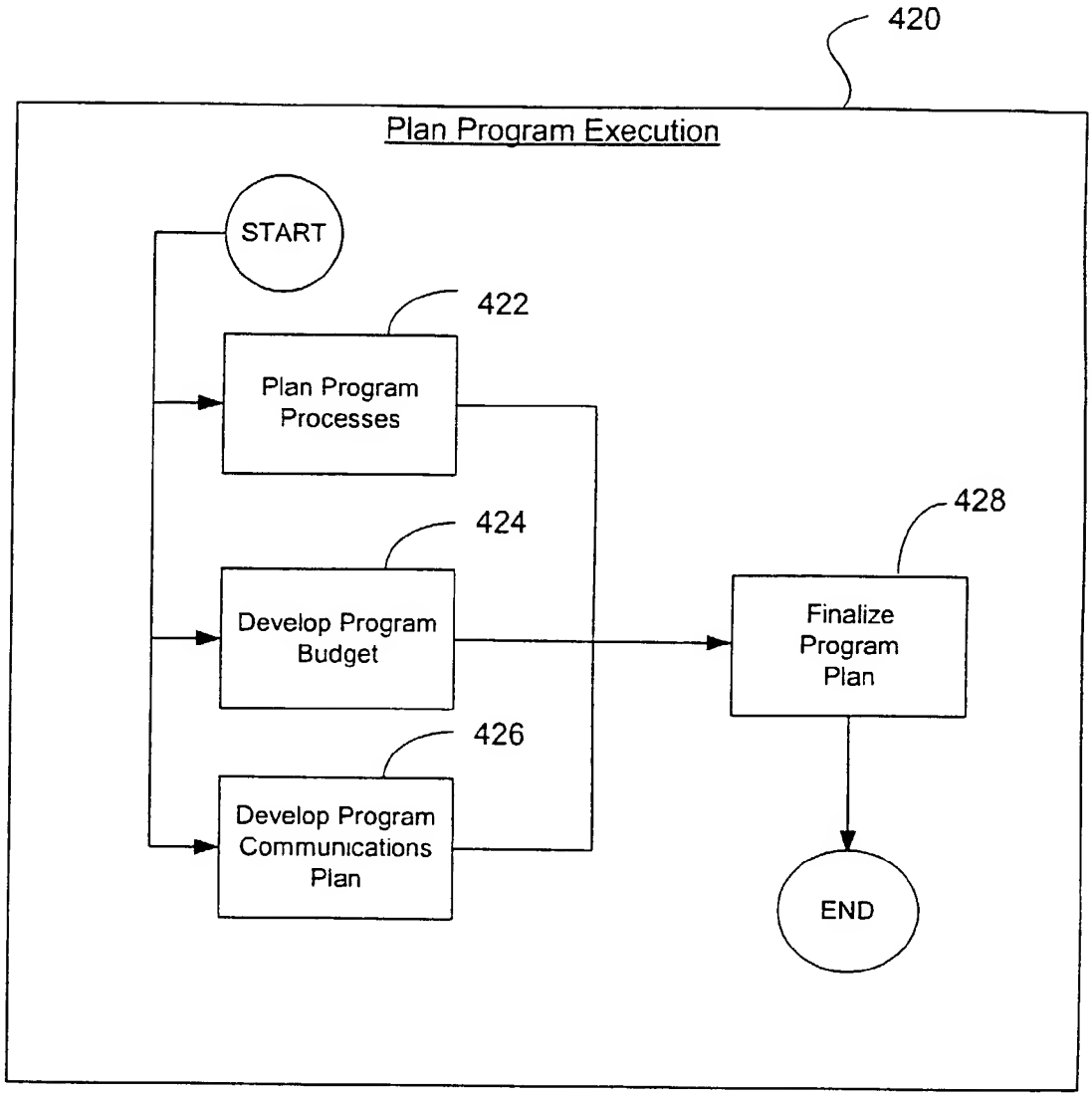

420
Plan Program Execution
START
422
Plan Program Processes
424
Develop Program Budget
426
Develop Program Communications Plan
428
Finalize Program Plan
END

Fig. 4C

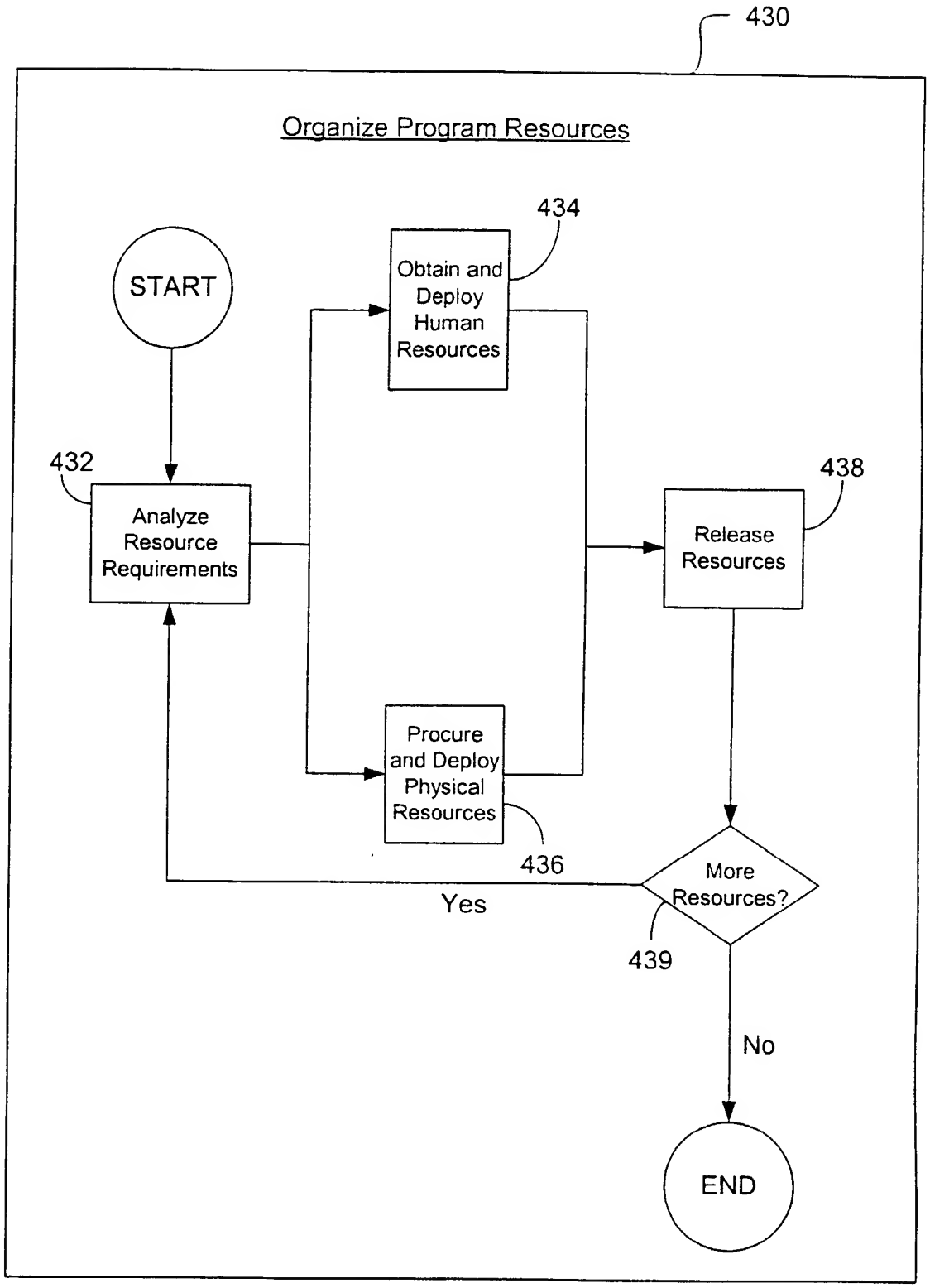

430
Organize Program Resources
START
434
Obtain and Deploy Human Resources
432
Analyze Resource Requirements
438
Release Resources
Procure and Deploy Physical Resources
436
More Resources?
Yes
439
No
END

Fig. 4D

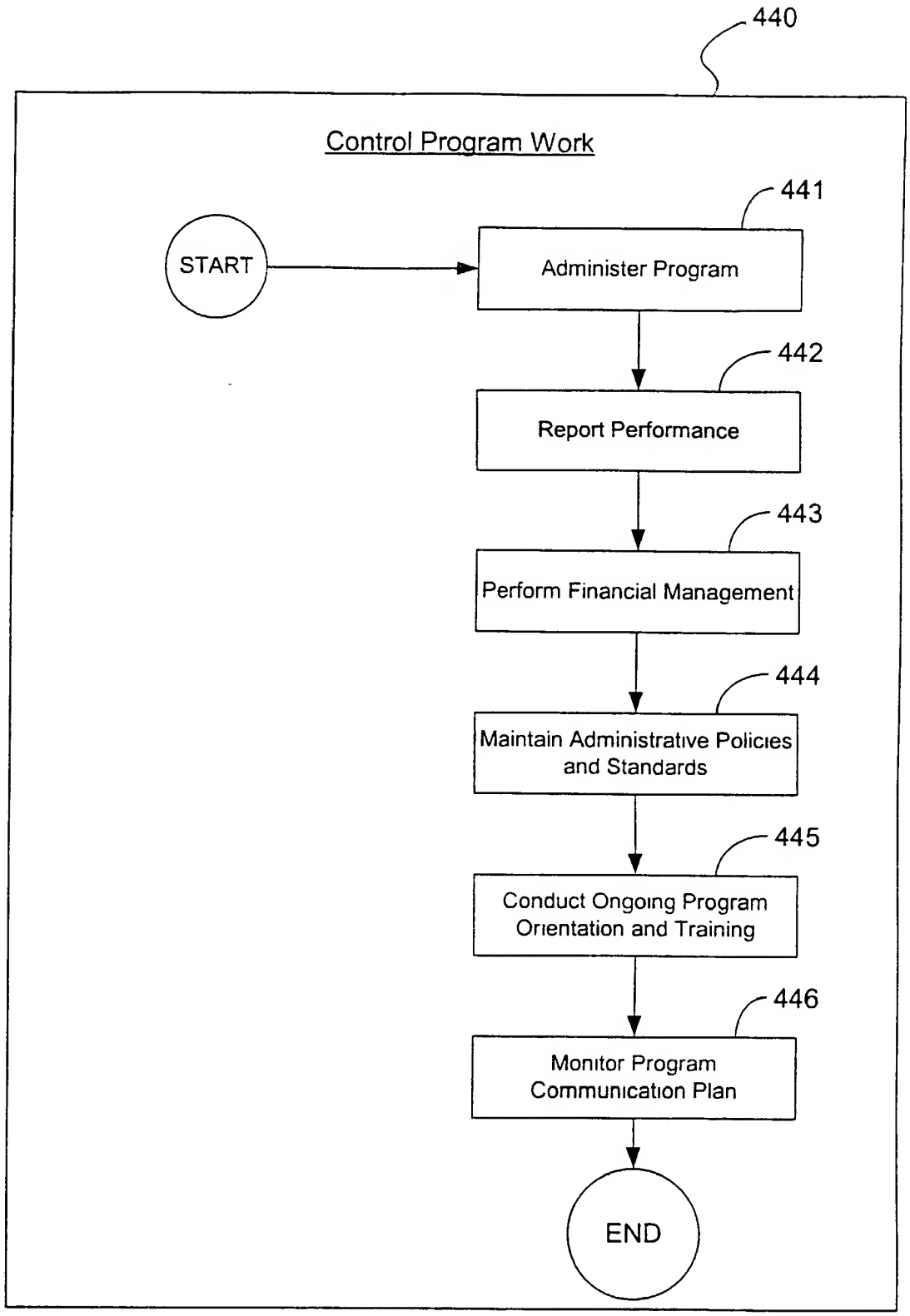

440
Control Program Work
441
START
Administer Program
442
Report Performance
443
Perform Financial Management
444
Maintain Administrative Policies and Standards
445
Conduct Ongoing Program Orientation and Training
446
Monitor Program Communication Plan
END

Fig. 4E

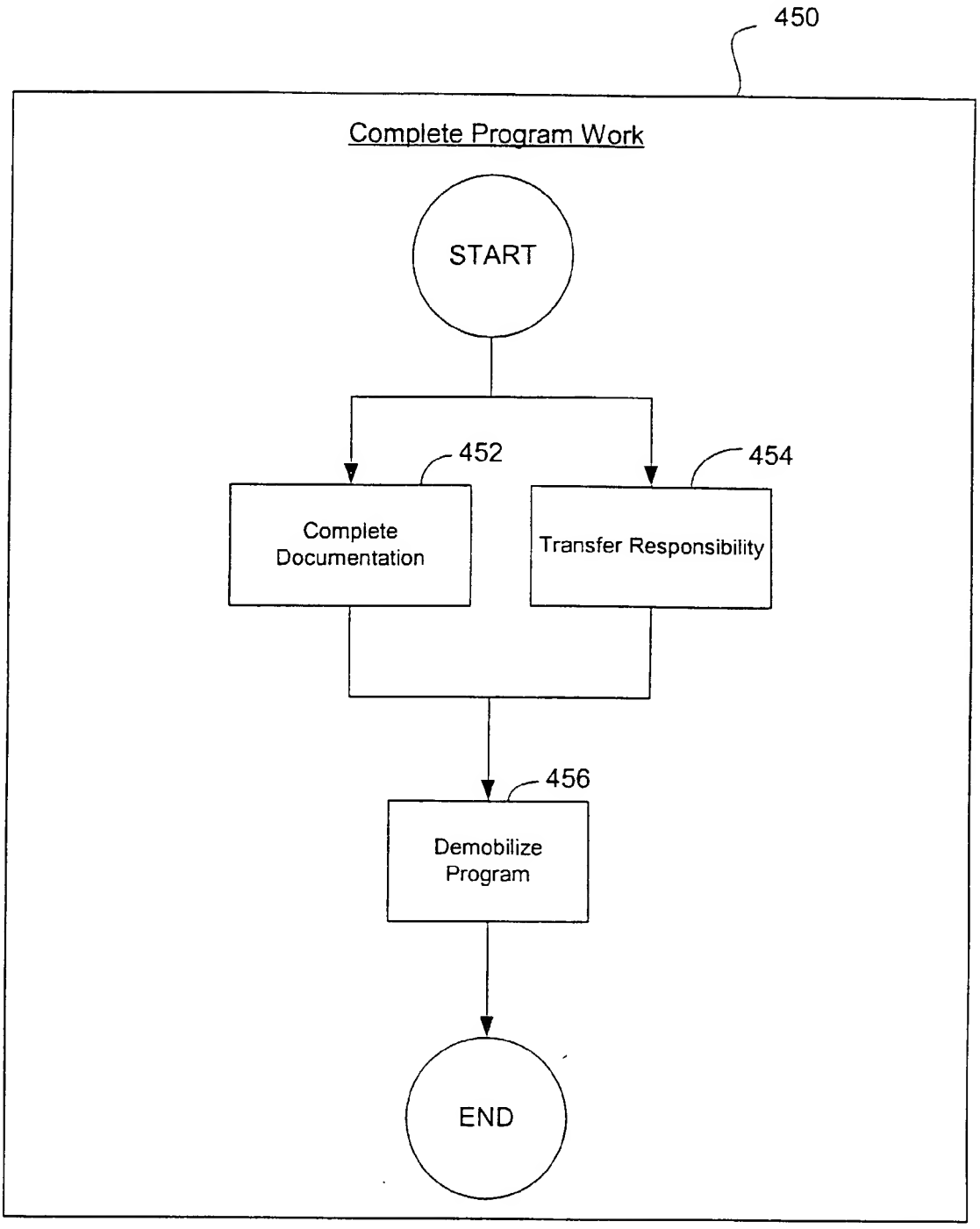

450
Complete Program Work
START
452
454
Complete Documentation
Transfer Responsibility
456
Demobilize Program
END

Fig. 4F

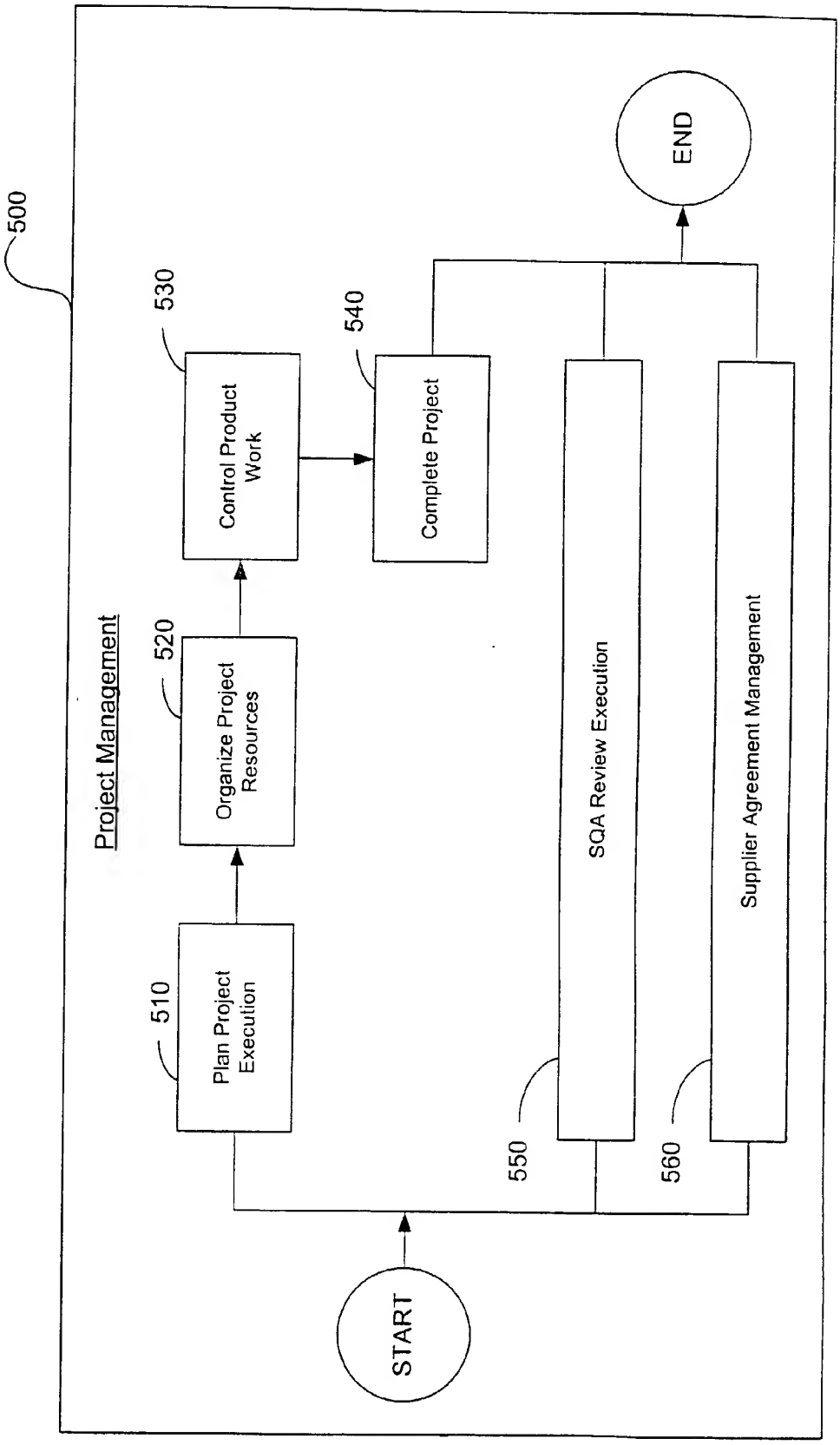

500
Project Management
START
END
510
Plan Project Execution
520
Organize Project Resources
530
Control Product Work
540
Complete Project
550
SQA Review Execution
560
Supplier Agreement Management

Fig. 5A

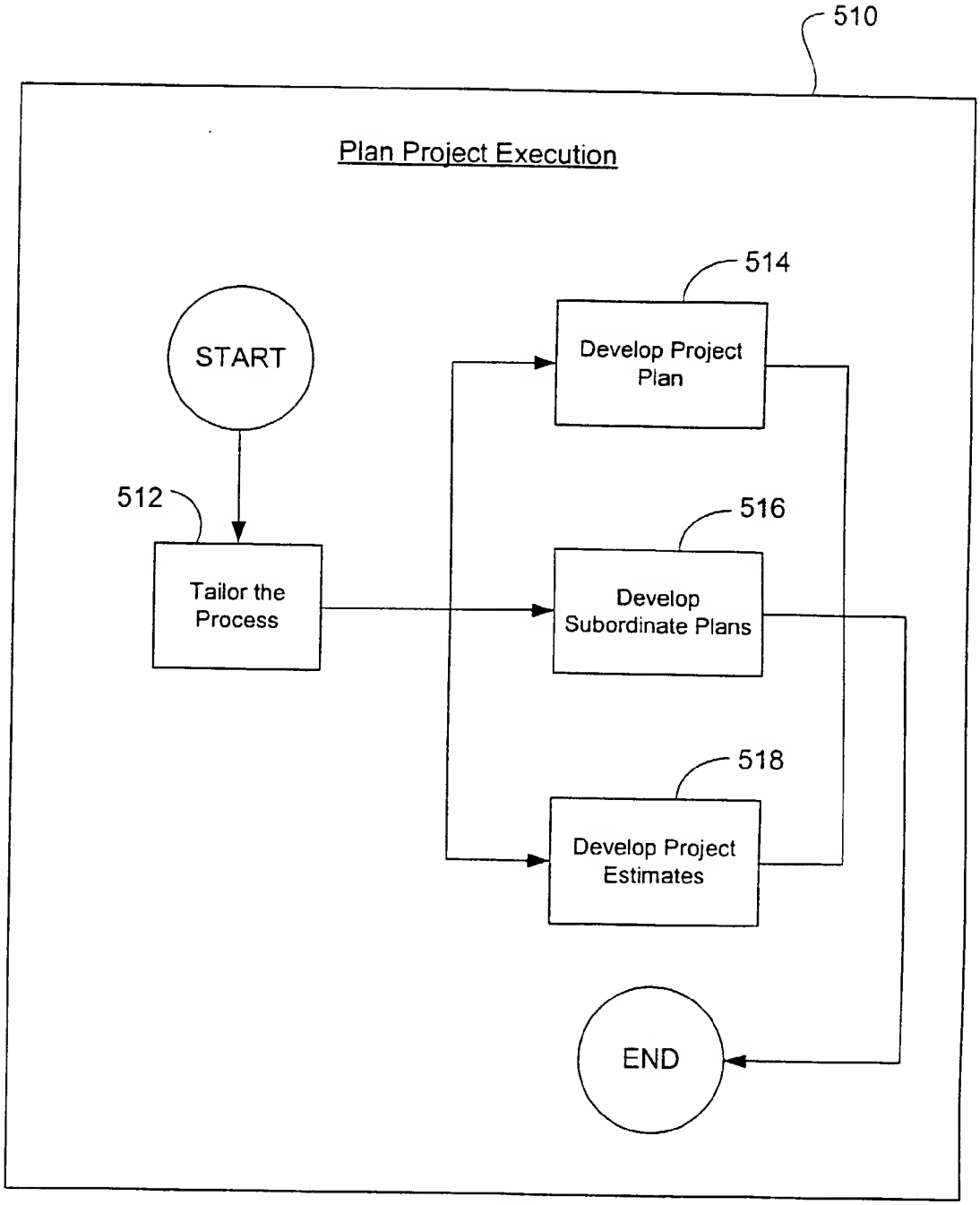

510
Plan Project Execution
514
START
Develop Project Plan
512
516
Tailor the Process
Develop Subordinate Plans
518
Develop Project Estimates
END

Fig. 5B

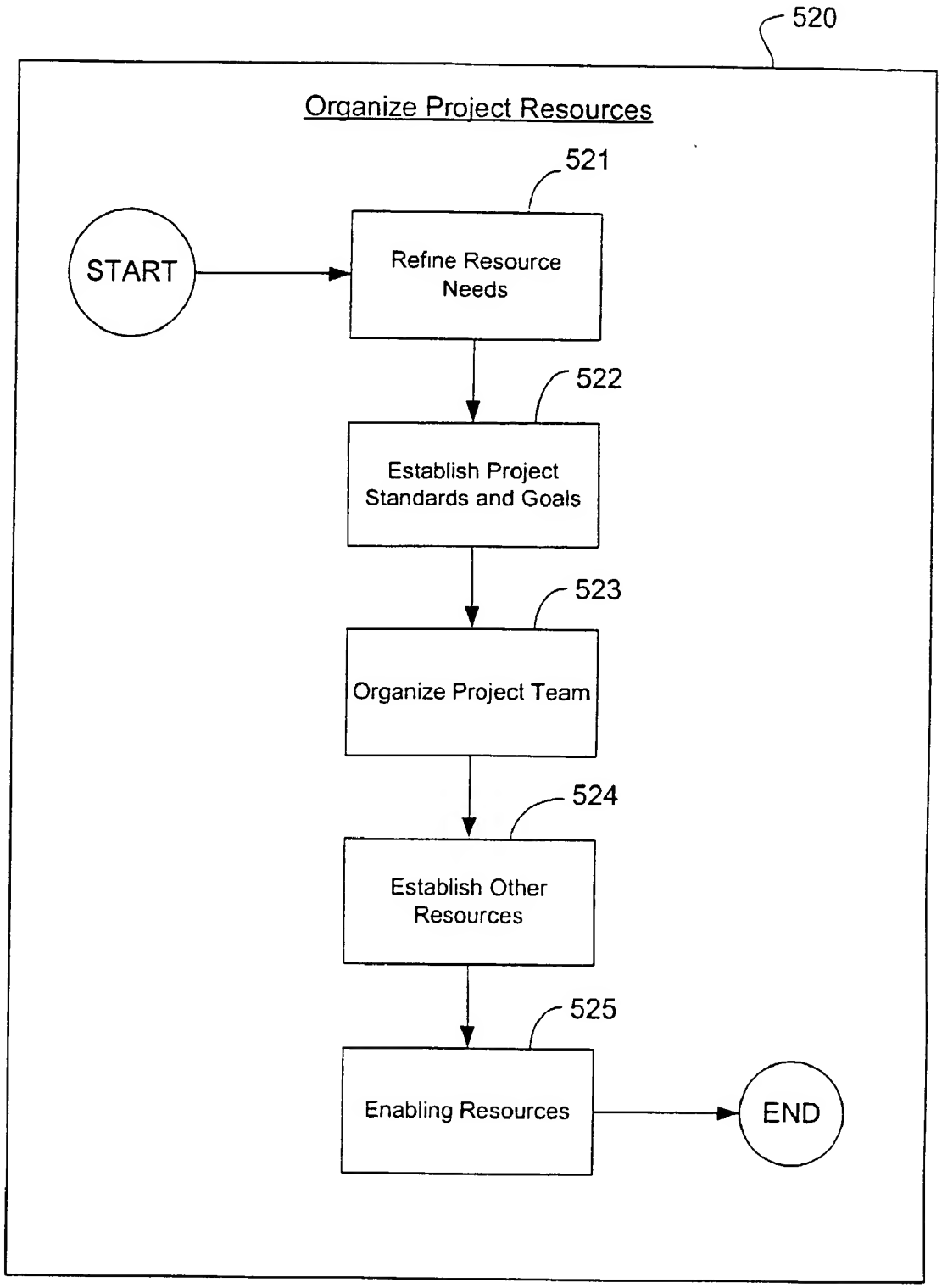

520
Organize Project Resources
521
START
Refine Resource Needs
522
Establish Project Standards and Goals
523
Organize Project Team
524
Establish Other Resources
525
Enabling Resources
END

Fig. 5C

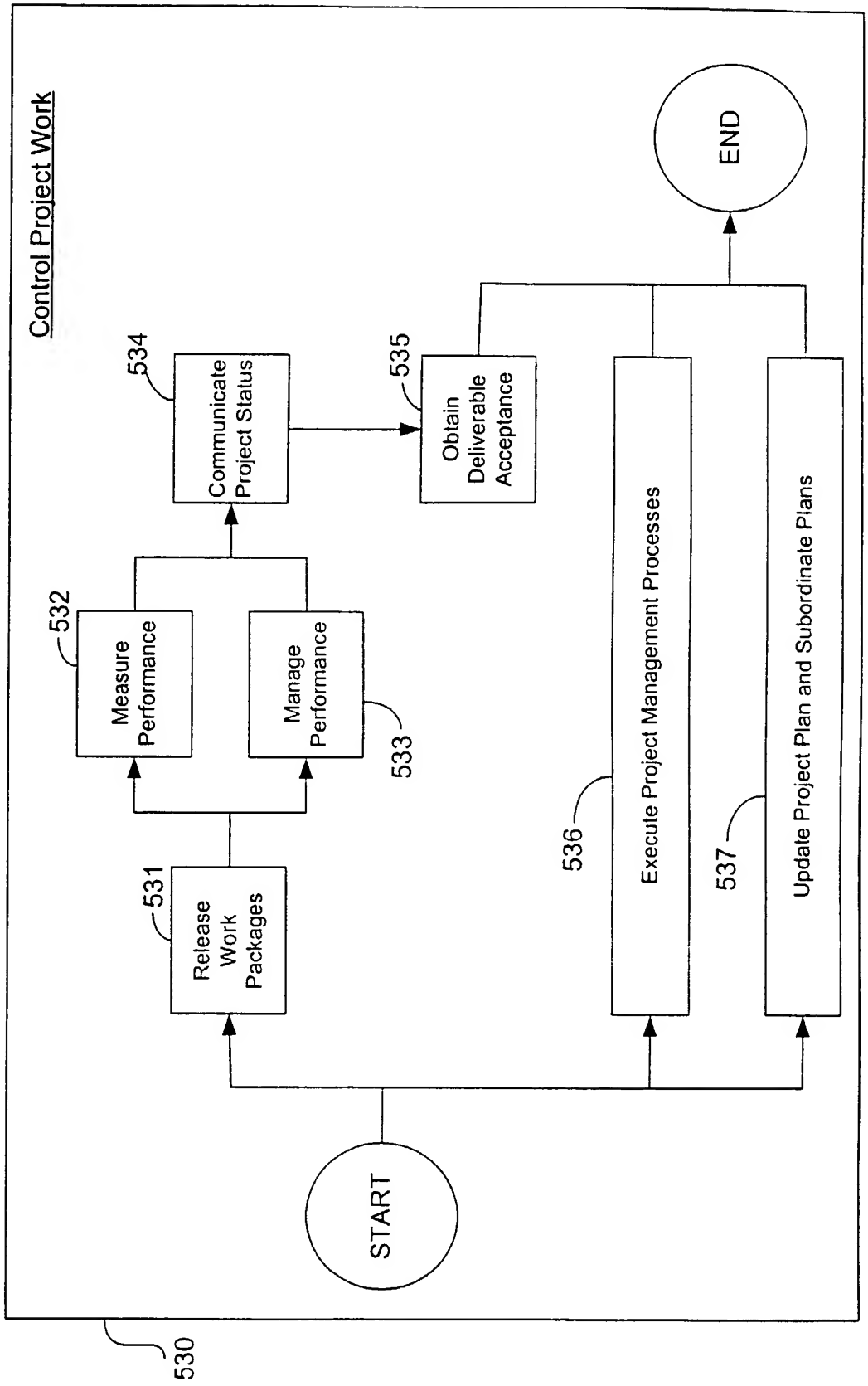

Control Project Work
530
START
END
531
Release Work Packages
532
Measure Performance
533
Manage Performance
534
Communicate Project Status
535
Obtain Deliverable Acceptance
536
Execute Project Management Processes
537
Update Project Plan and Subordinate Plans

Fig. 5D

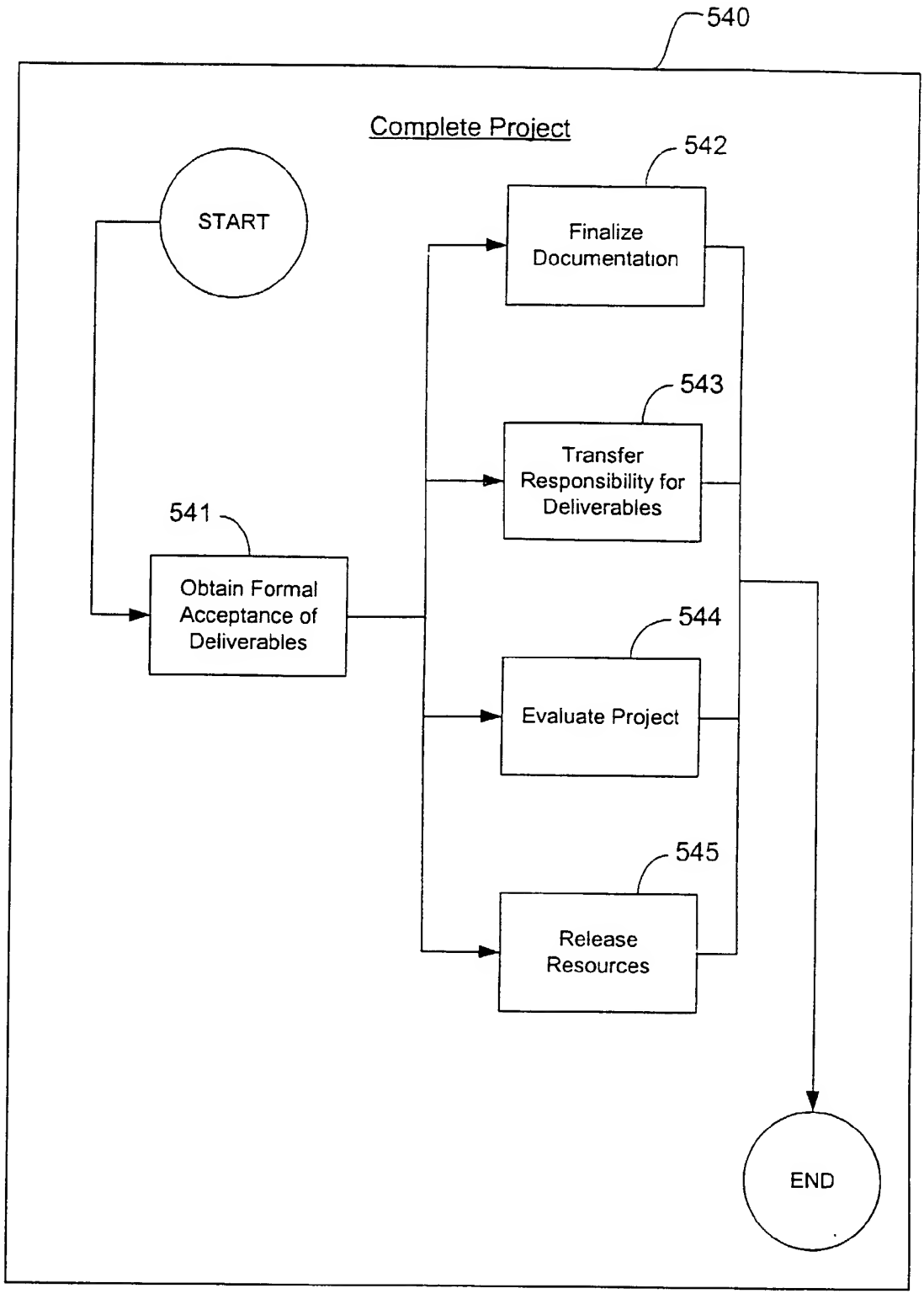

540
Complete Project
START
542
Finalize Documentation
543
Transfer Responsibility for Deliverables
541
Obtain Formal Acceptance of Deliverables
544
Evaluate Project
545
Release Resources
END

Fig. 5E

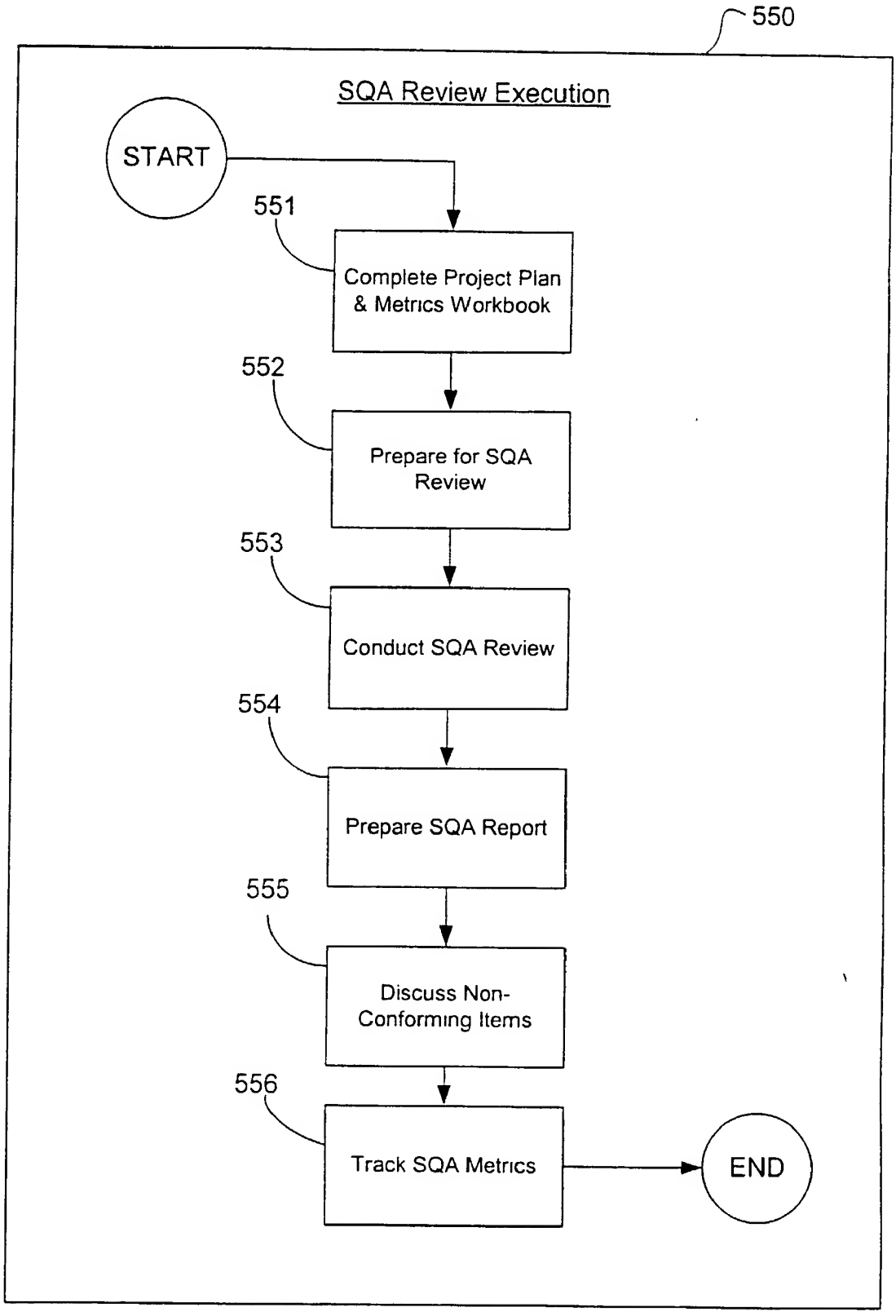

550
SQA Review Execution
START
551
Complete Project Plan & Metrics Workbook
552
Prepare for SQA Review
553
Conduct SQA Review
554
Prepare SQA Report
555
Discuss Non-Conforming Items
556
Track SQA Metrics
END

Fig. 5F

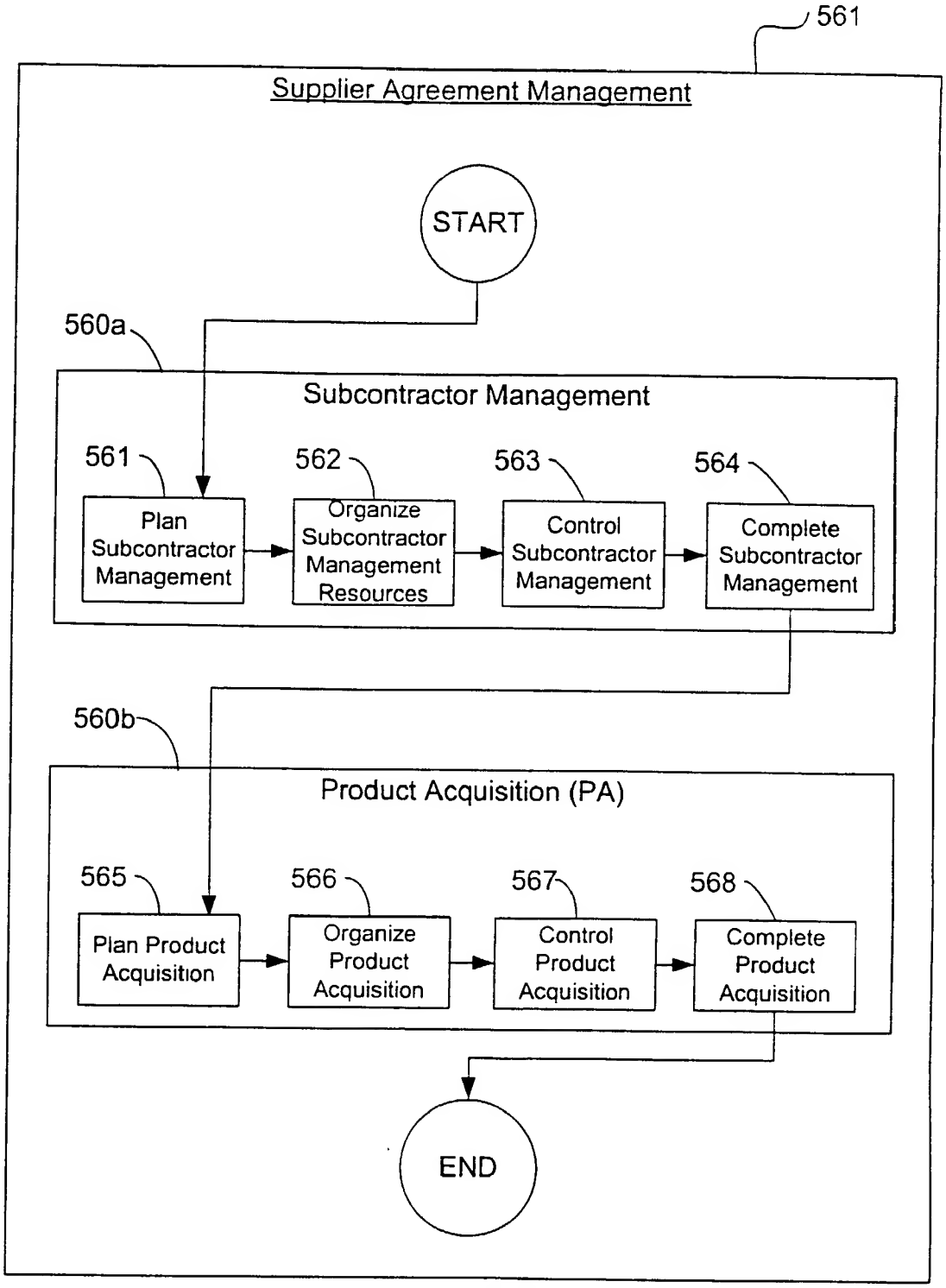

561
Supplier Agreement Management
START
560a
Subcontractor Management
561
Plan Subcontractor Management
562
Organize Subcontractor Management Resources
563
Control Subcontractor Management
564
Complete Subcontractor Management
560b
Product Acquisition (PA)
565
Plan Product Acquisition
566
Organize Product Acquisition
567
Control Product Acquisition
568
Complete Product Acquisition
END

Fig. 5G

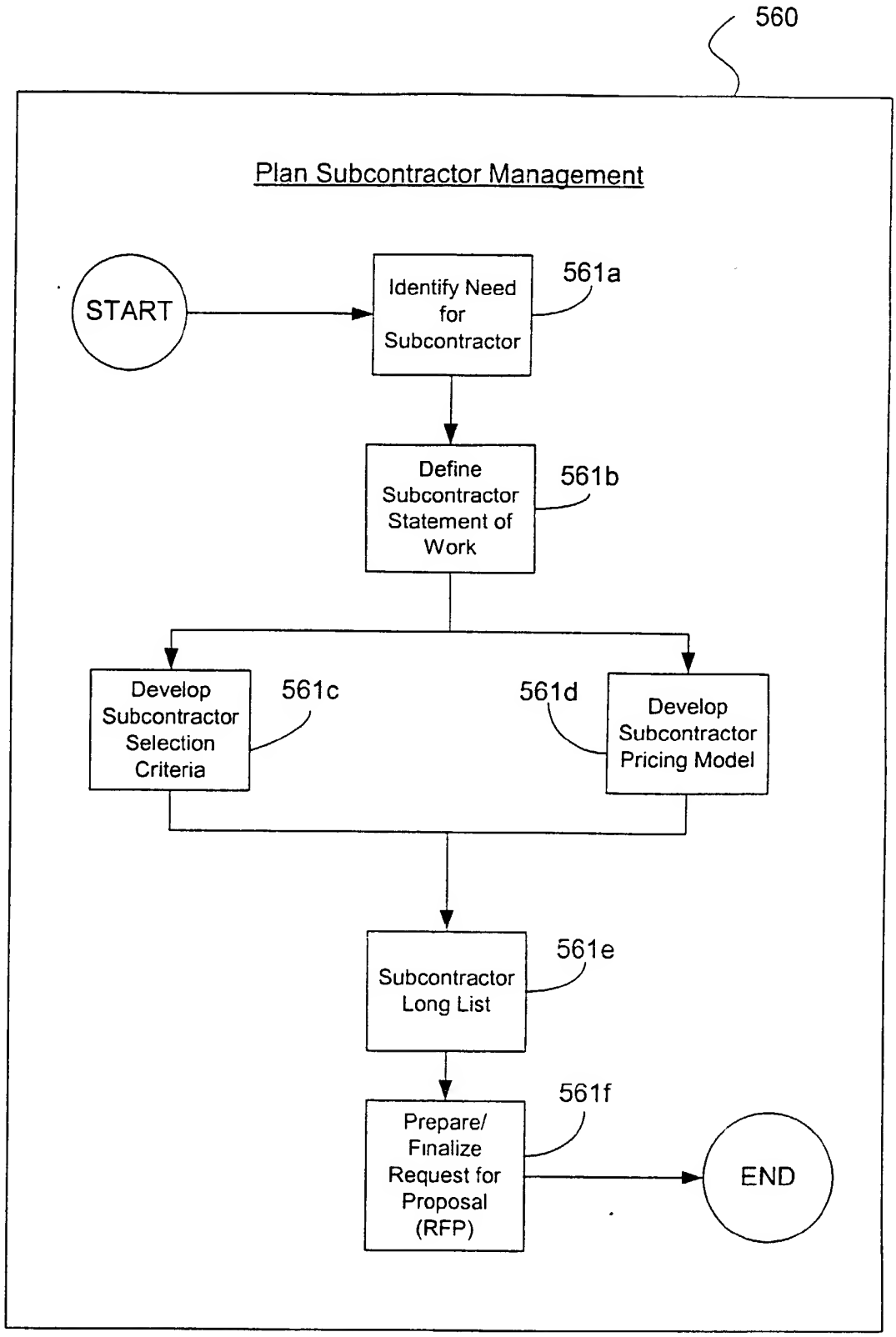

560
Plan Subcontractor Management
START
Identify Need for Subcontractor
561a
Define Subcontractor Statement of Work
561b
Develop Subcontractor Selection Criteria
561c
561d
Develop Subcontractor Pricing Model
Subcontractor Long List
561e
Prepare/ Finalize Request for Proposal (RFP)
561f
END

Fig. 5H

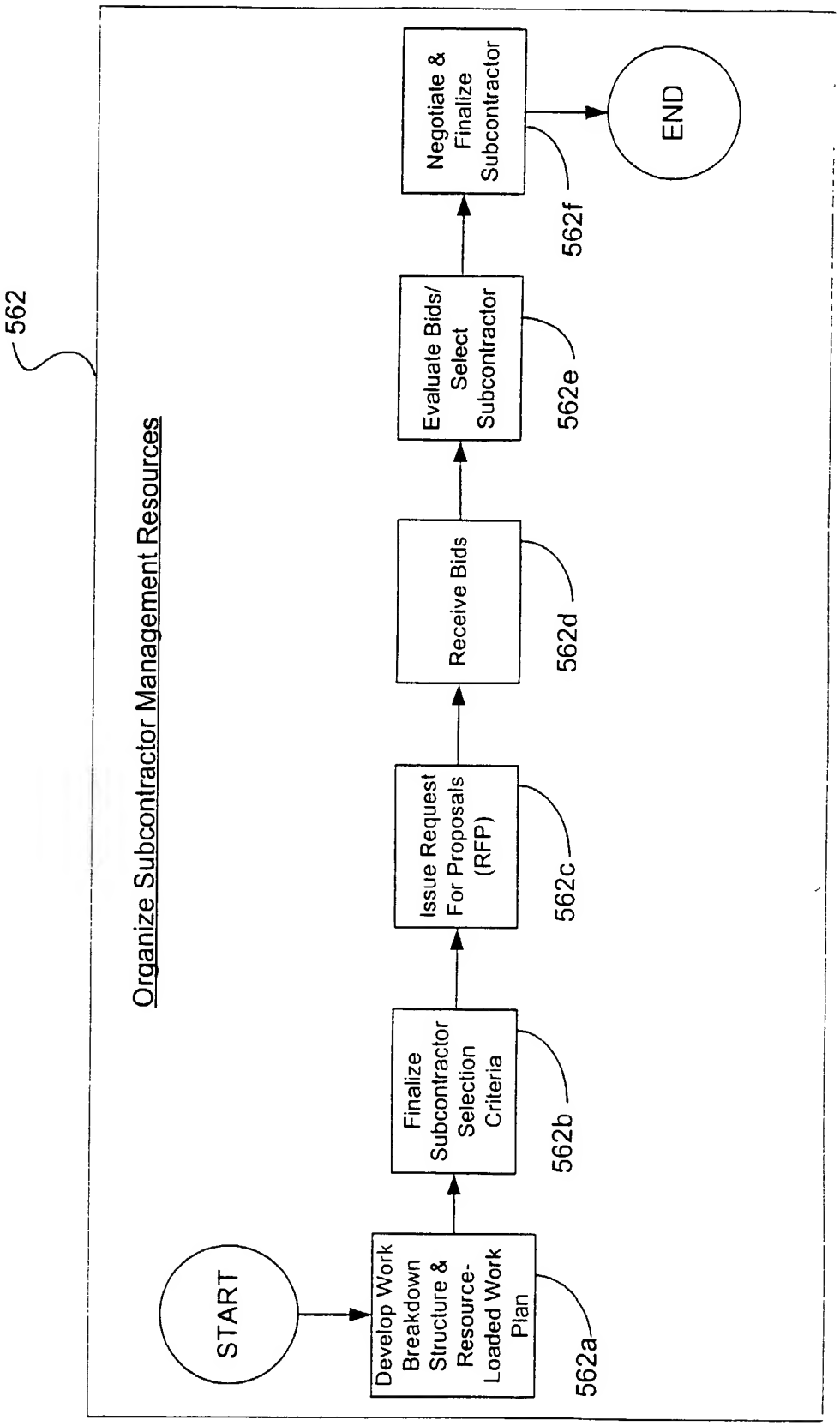

562
Organize Subcontractor Management Resources
START
Develop Work Breakdown Structure & Resource-Loaded Work Plan
562a
Finalize Subcontractor Selection Criteria
562b
Issue Request For Proposals (RFP)
562c
Receive Bids
562d
Evaluate Bids/ Select Subcontractor
562e
Negotiate & Finalize Subcontractor
562f
END

Fig. 5I

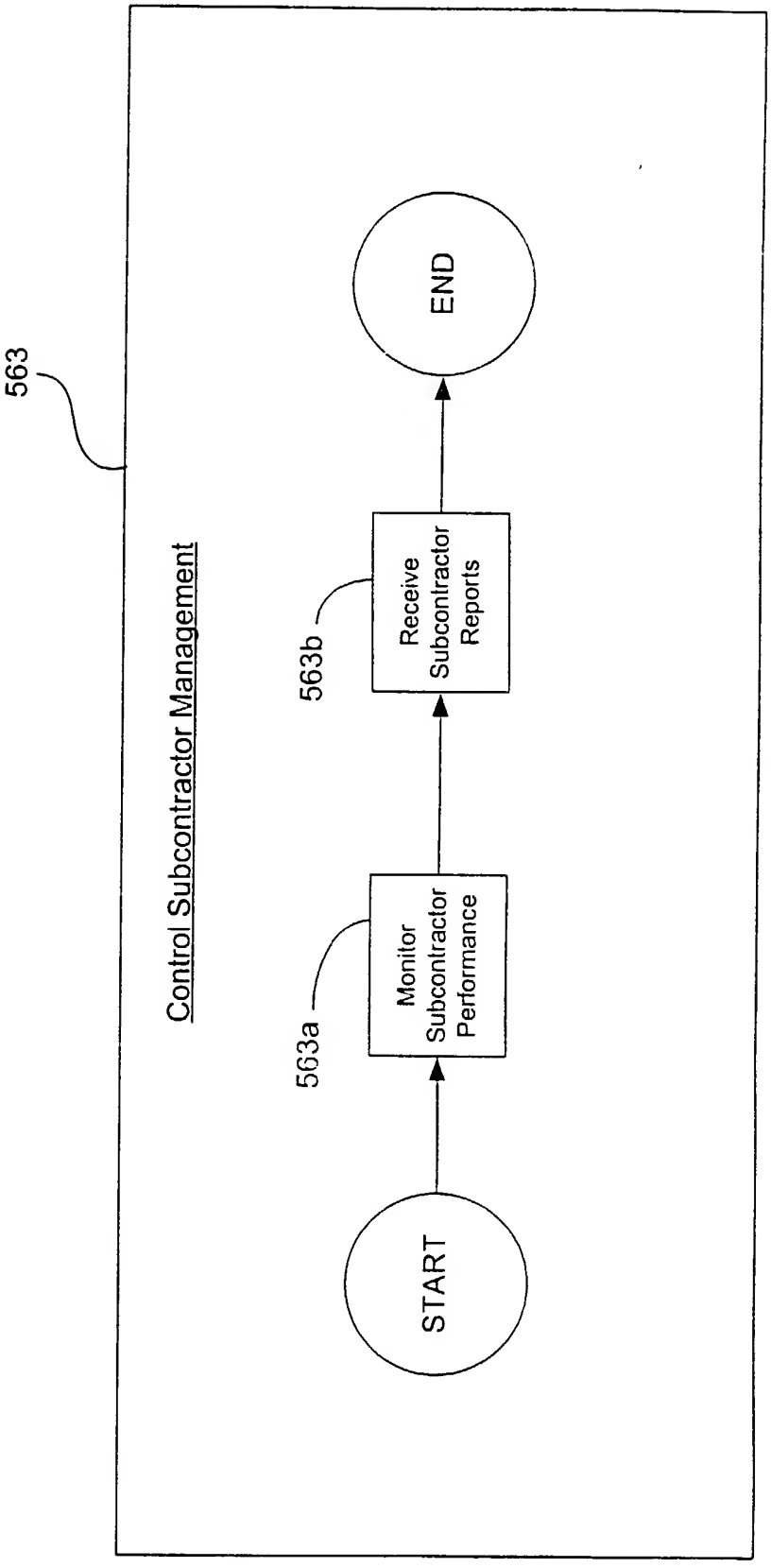

563
Control Subcontractor Management
START
563a
Monitor Subcontractor Performance
563b
Receive Subcontractor Reports
END

Fig. 5J

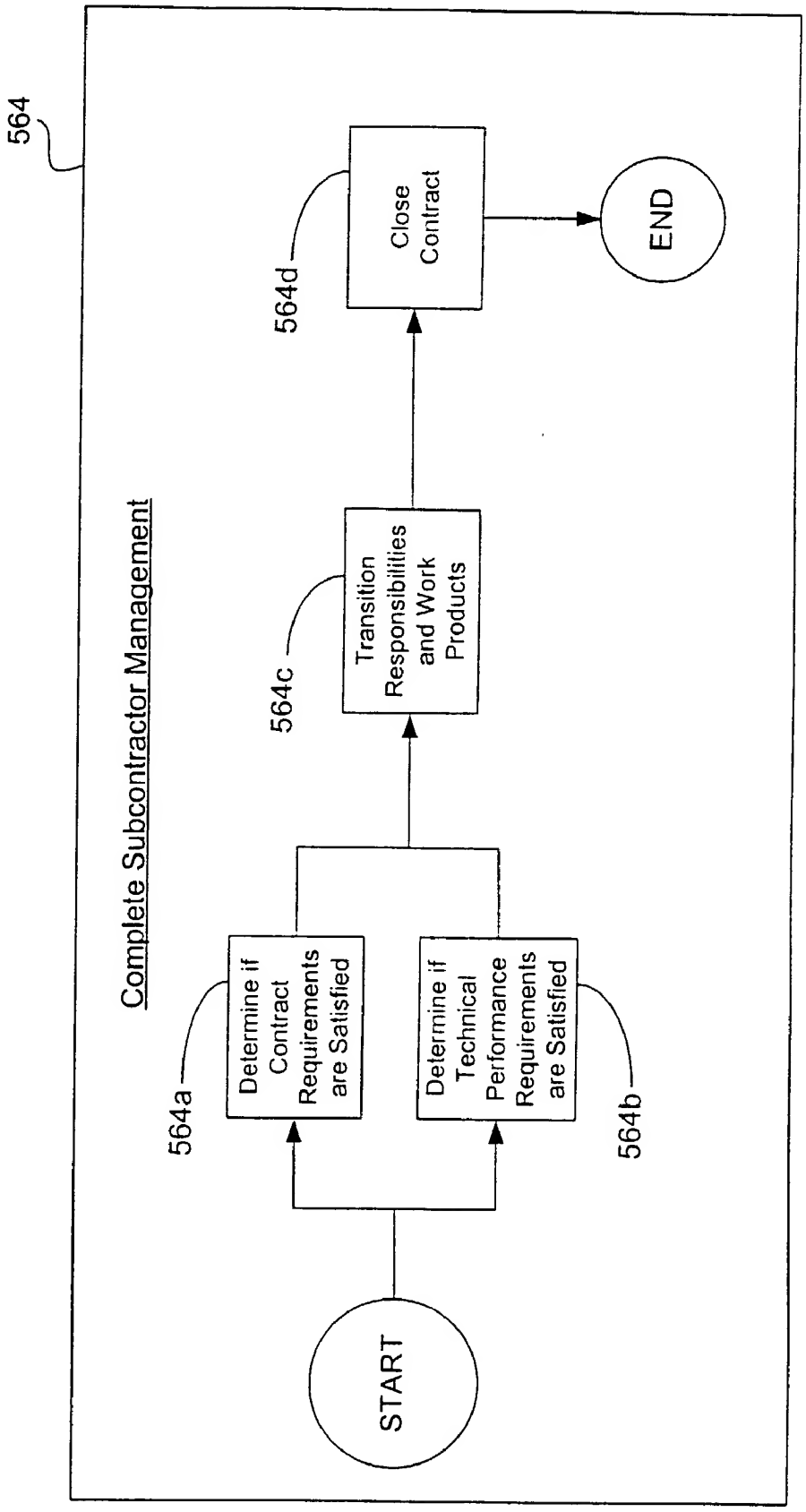

564
Complete Subcontractor Management
START
564a
Determine if Contract Requirements are Satisfied
564b
Determine if Technical Performance Requirements are Satisfied
564c
Transition Responsibilities and Work Products
564d
Close Contract
END

Fig. 5K

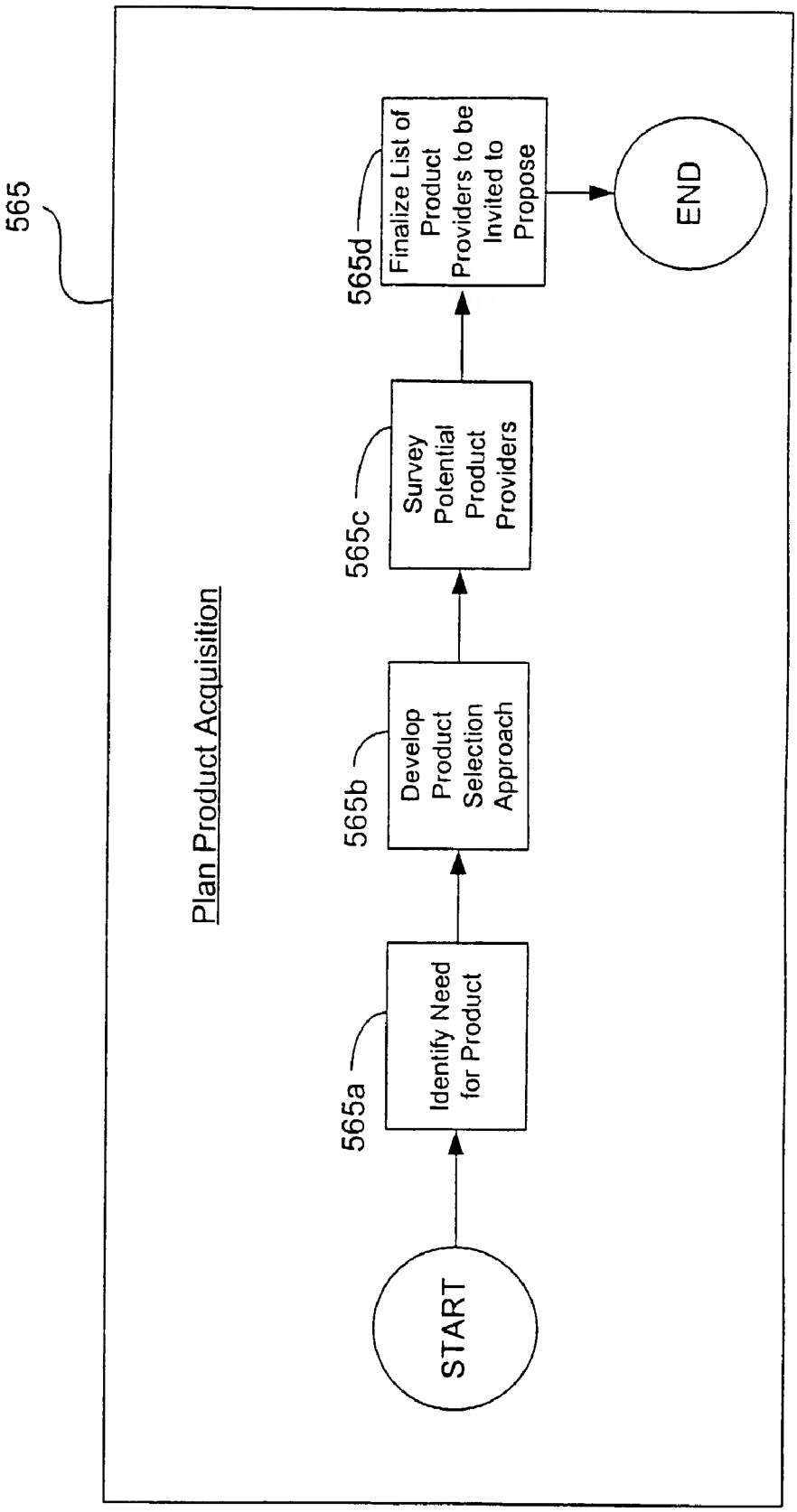

565
Plan Product Acquisition
START
565a
Identify Need for Product
565b
Develop Product Selection Approach
565c
Survey Potential Product Providers
565d
Finalize List of Product Providers to be Invited to Propose
END

Fig. 5L

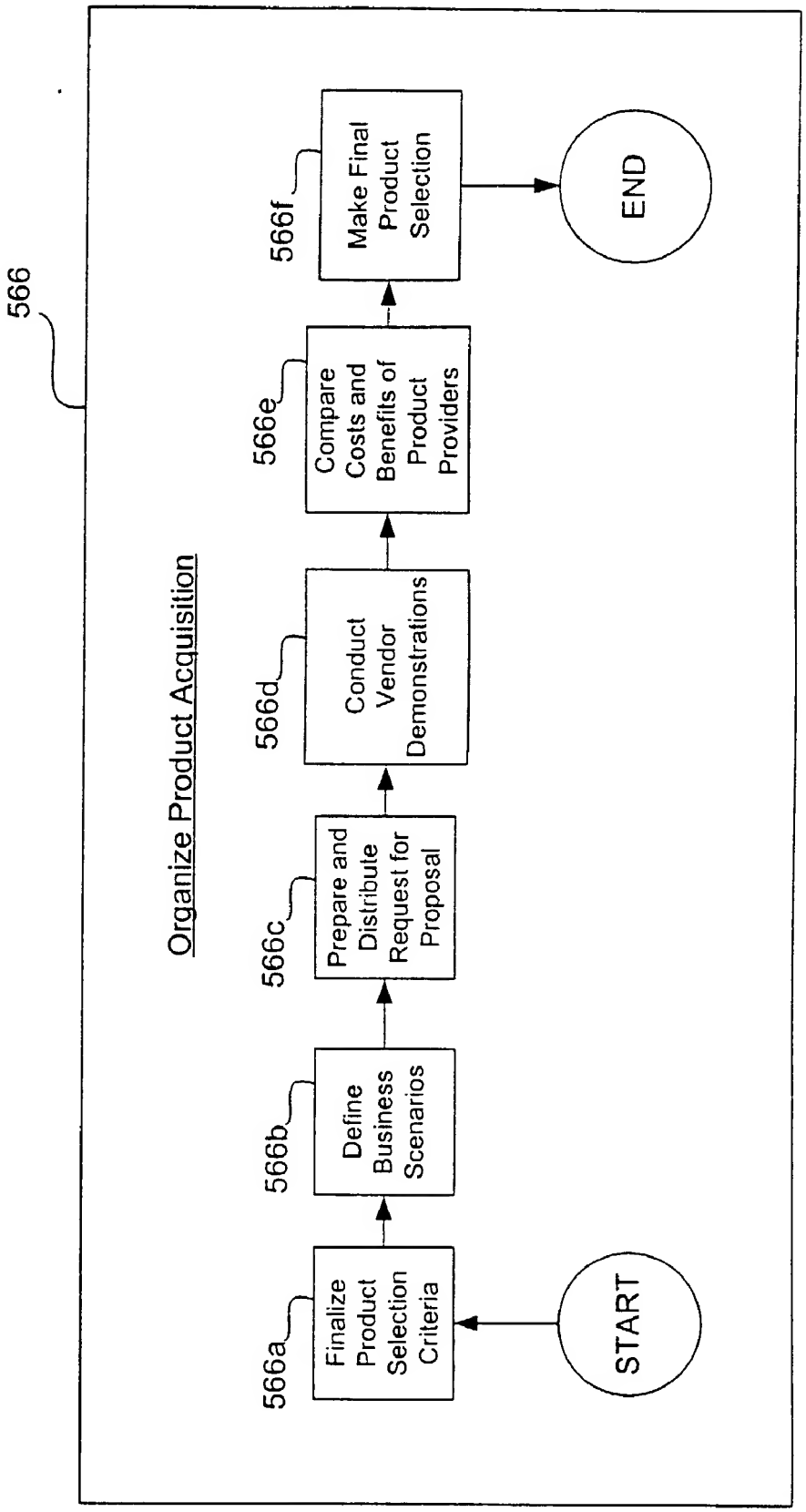

566
Organize Product Acquisition
START
566a
Finalize Product Selection Criteria
566b
Define Business Scenarios
566c
Prepare and Distribute Request for Proposal
566d
Conduct Vendor Demonstrations
566e
Compare Costs and Benefits of Product Providers
566f
Make Final Product Selection
END

Fig. 5M

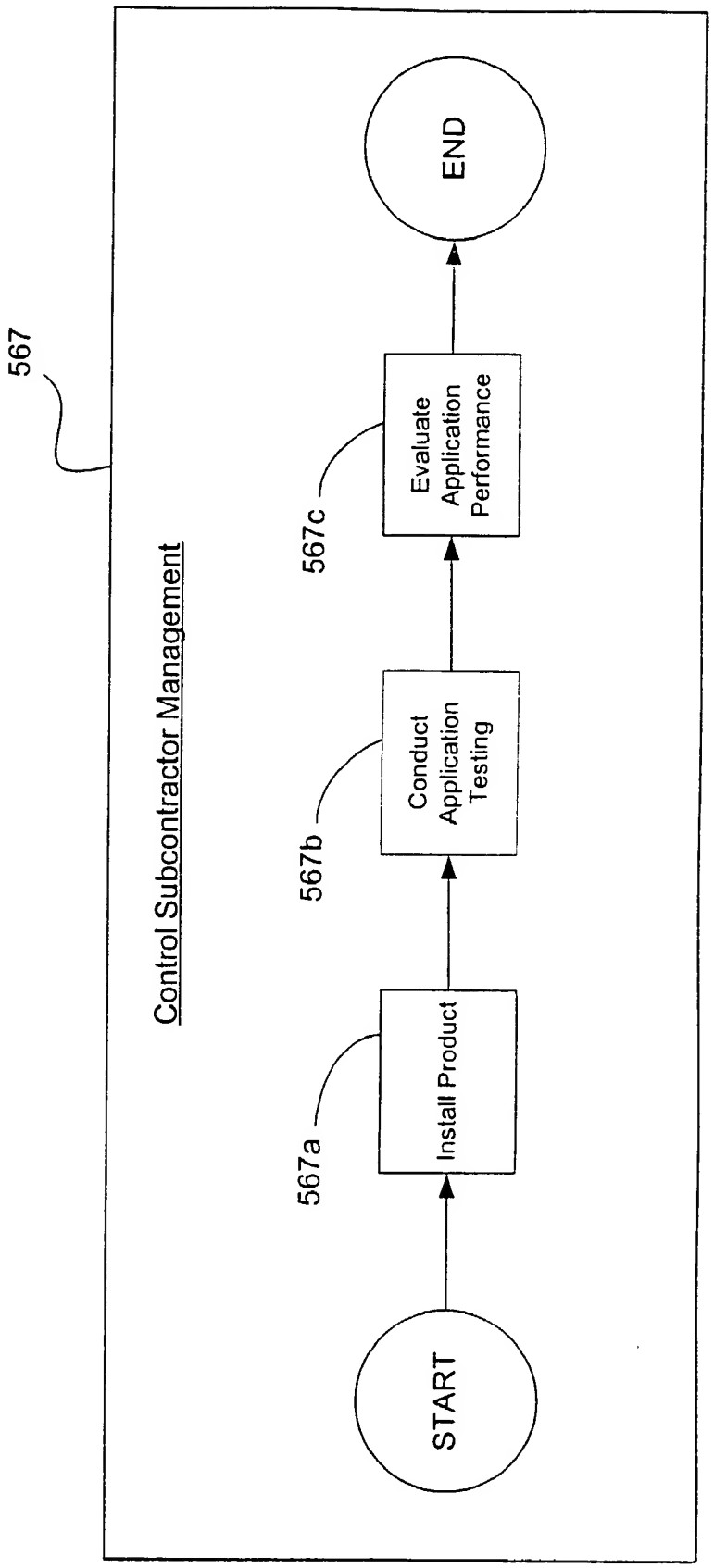

567
Control Subcontractor Management
START
567a
Install Product
567b
Conduct Application Testing
567c
Evaluate Application Performance
END

Fig. 5N

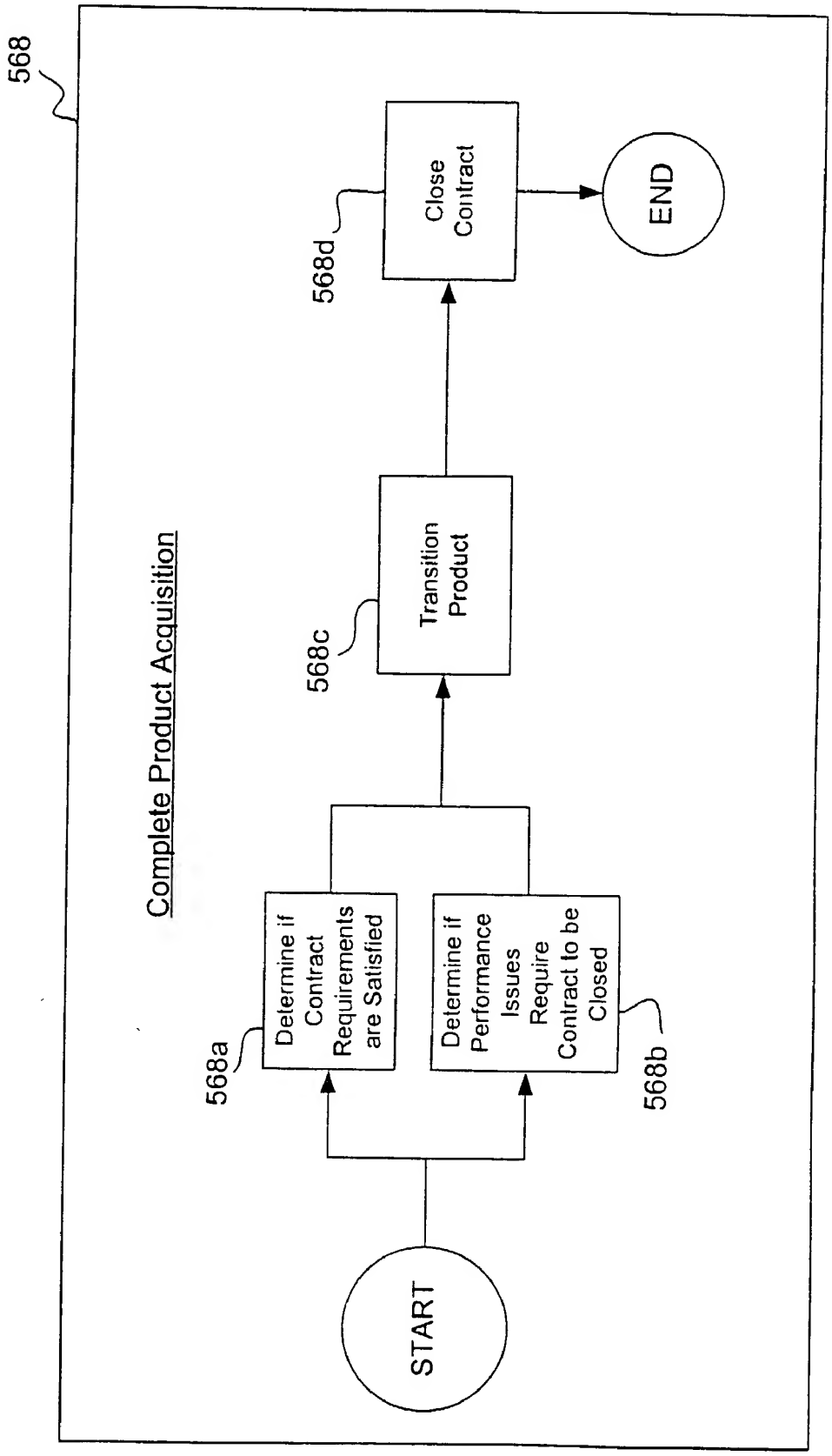

568
Complete Product Acquisition
START
Determine if Contract Requirements are Satisfied
568a
Determine if Performance Issues Require Contract to be Closed
568b
Transition Product
568c
Close Contract
568d
END

Fig. 5O

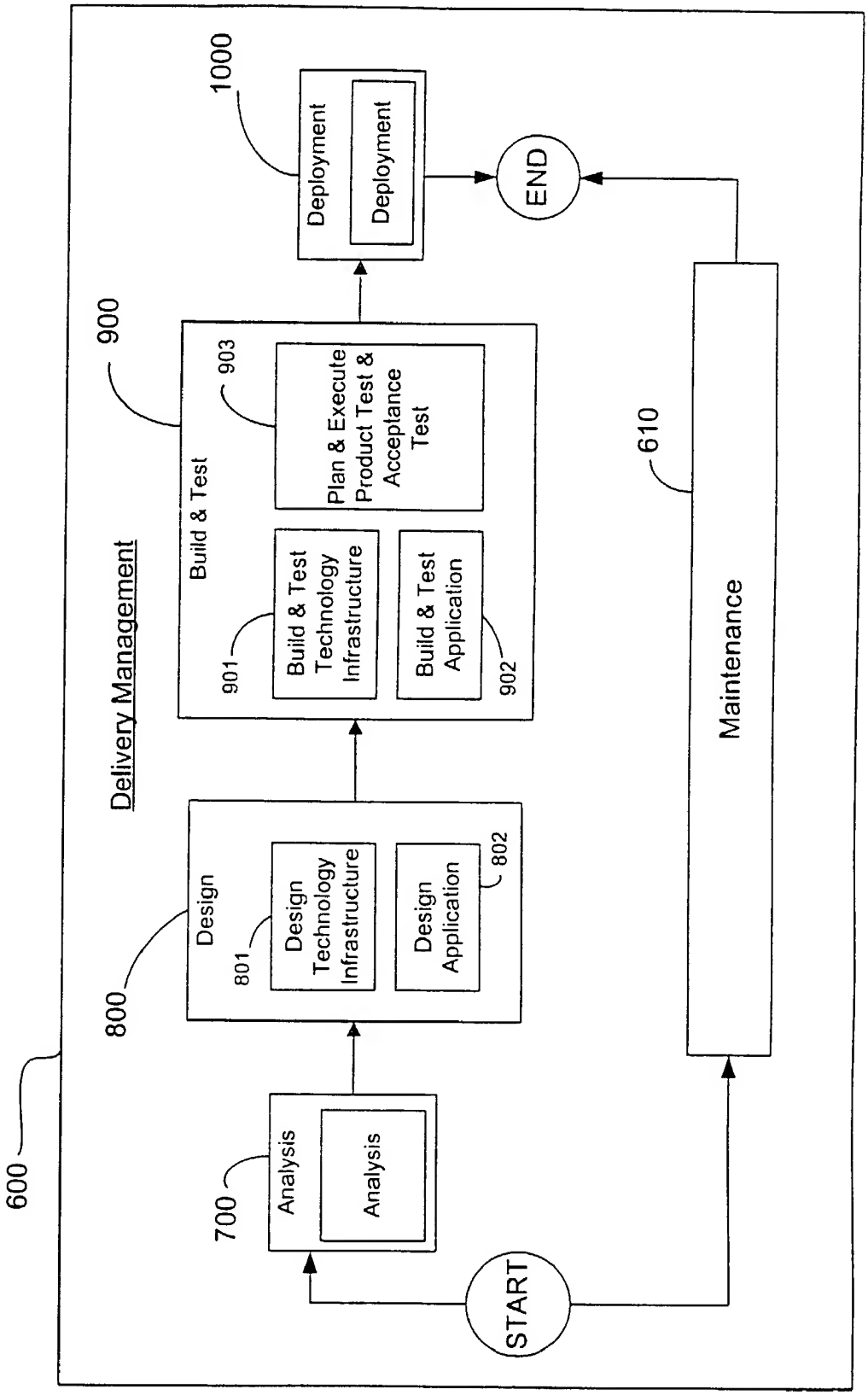

600
Delivery Management
START
700
Analysis
Analysis
800
Design
801
Design Technology Infrastructure
Design Application
802
900
Build & Test
901
Build & Test Technology Infrastructure
Build & Test Application
902
903
Plan & Execute Product Test & Acceptance Test
1000
Deployment
Deployment
END
610
Maintenance

Fig. 6A

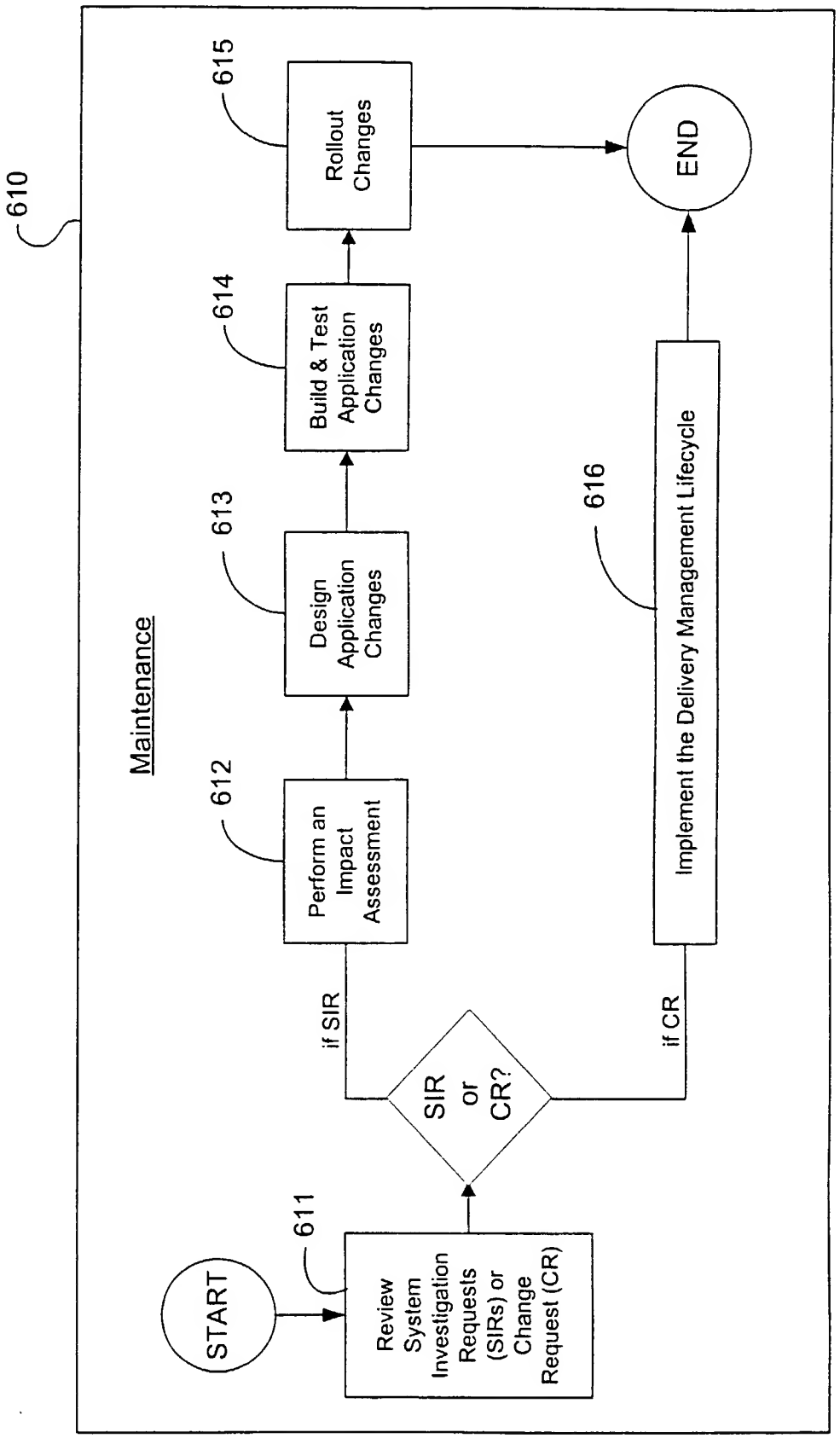

610
Maintenance
START
611
Review System Investigation Requests (SIRs) or Change Request (CR)
SIR or CR?
if SIR
612
Perform an Impact Assessment
613
Design Application Changes
614
Build & Test Application Changes
615
Rollout Changes
END
if CR
616
Implement the Delivery Management Lifecycle

Fig. 6B

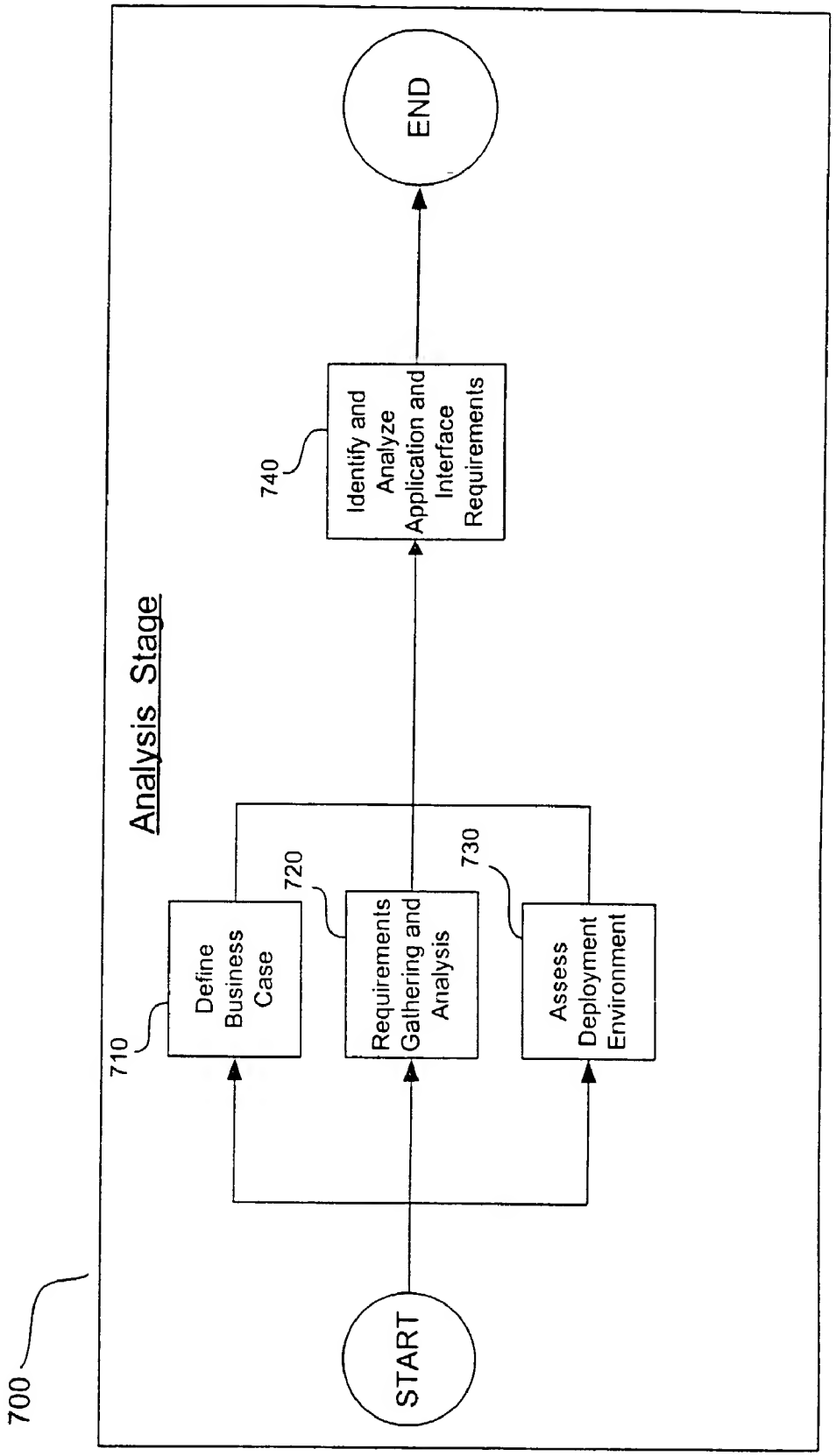

700
START
Analysis Stage
710
Define Business Case
720
Requirements Gathering and Analysis
730
Assess Deployment Environment
740
Identify and Analyze Application and Interface Requirements
END

Fig. 7A

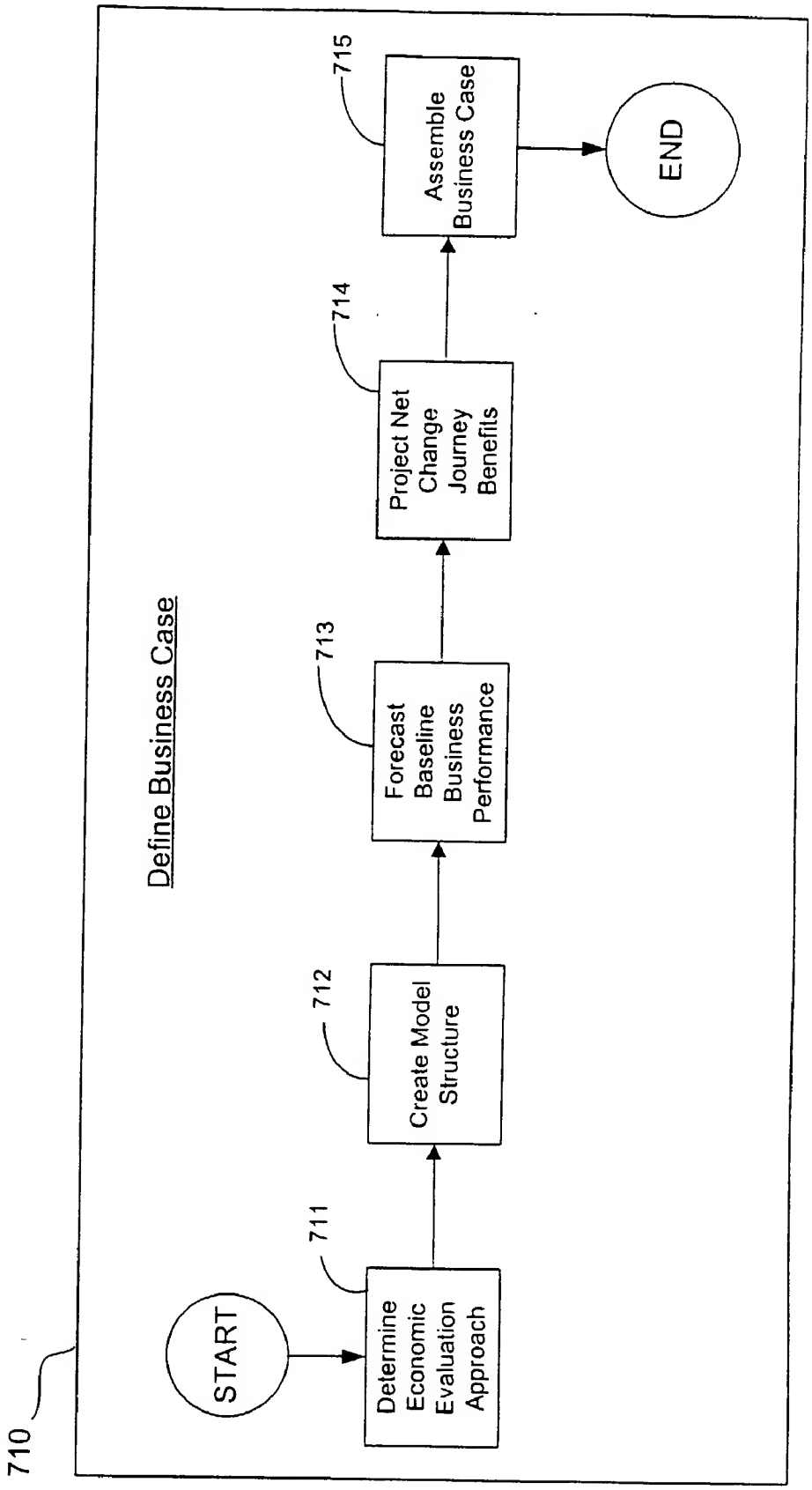

710
Define Business Case
START
711
Determine Economic Evaluation Approach
712
Create Model Structure
713
Forecast Baseline Business Performance
714
Project Net Change Journey Benefits
715
Assemble Business Case
END

Fig. 7B

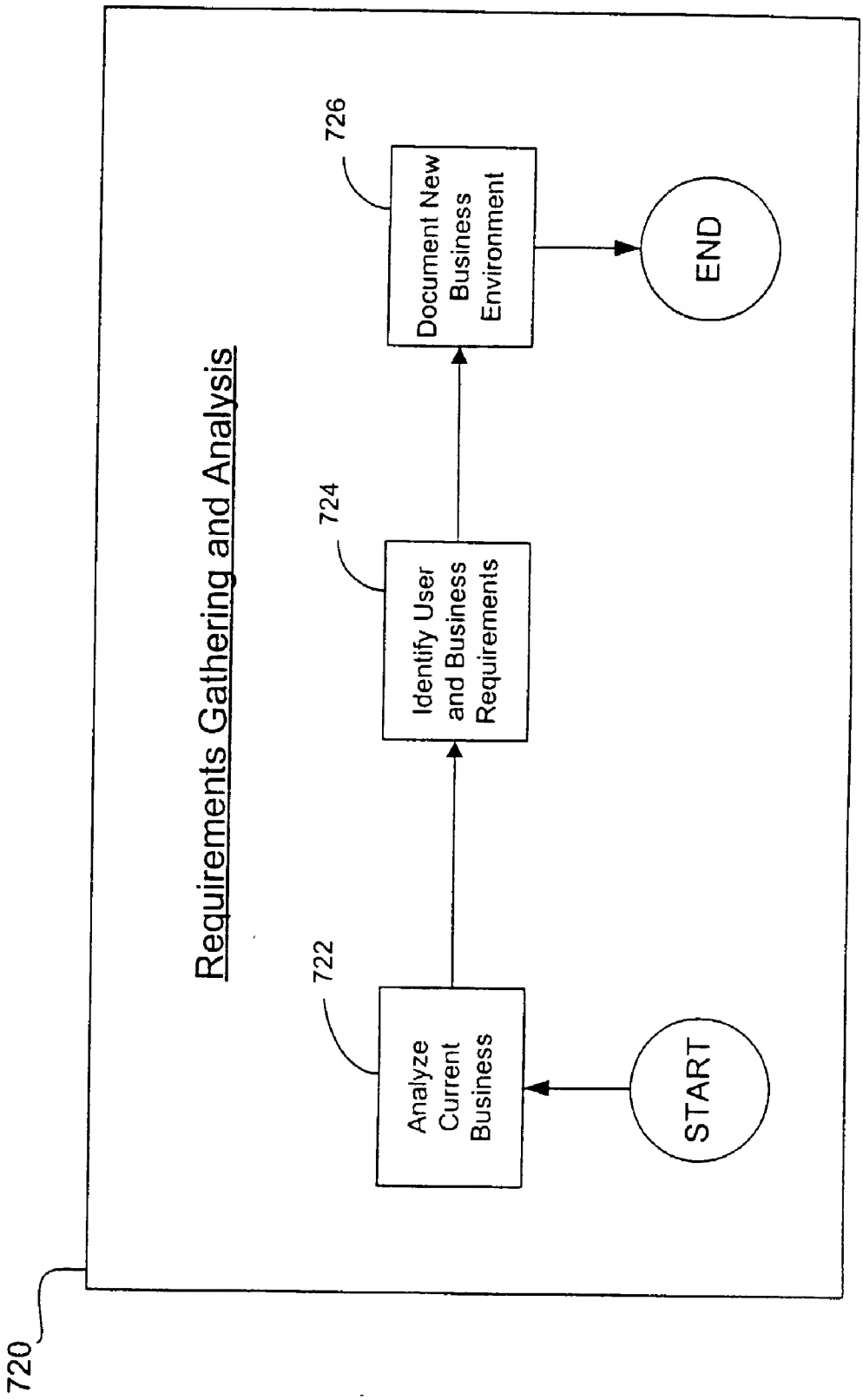

720
Requirements Gathering and Analysis
722
Analyze Current Business
724
Identify User and Business Requirements
726
Document New Business Environment
START
END

Fig. 7C

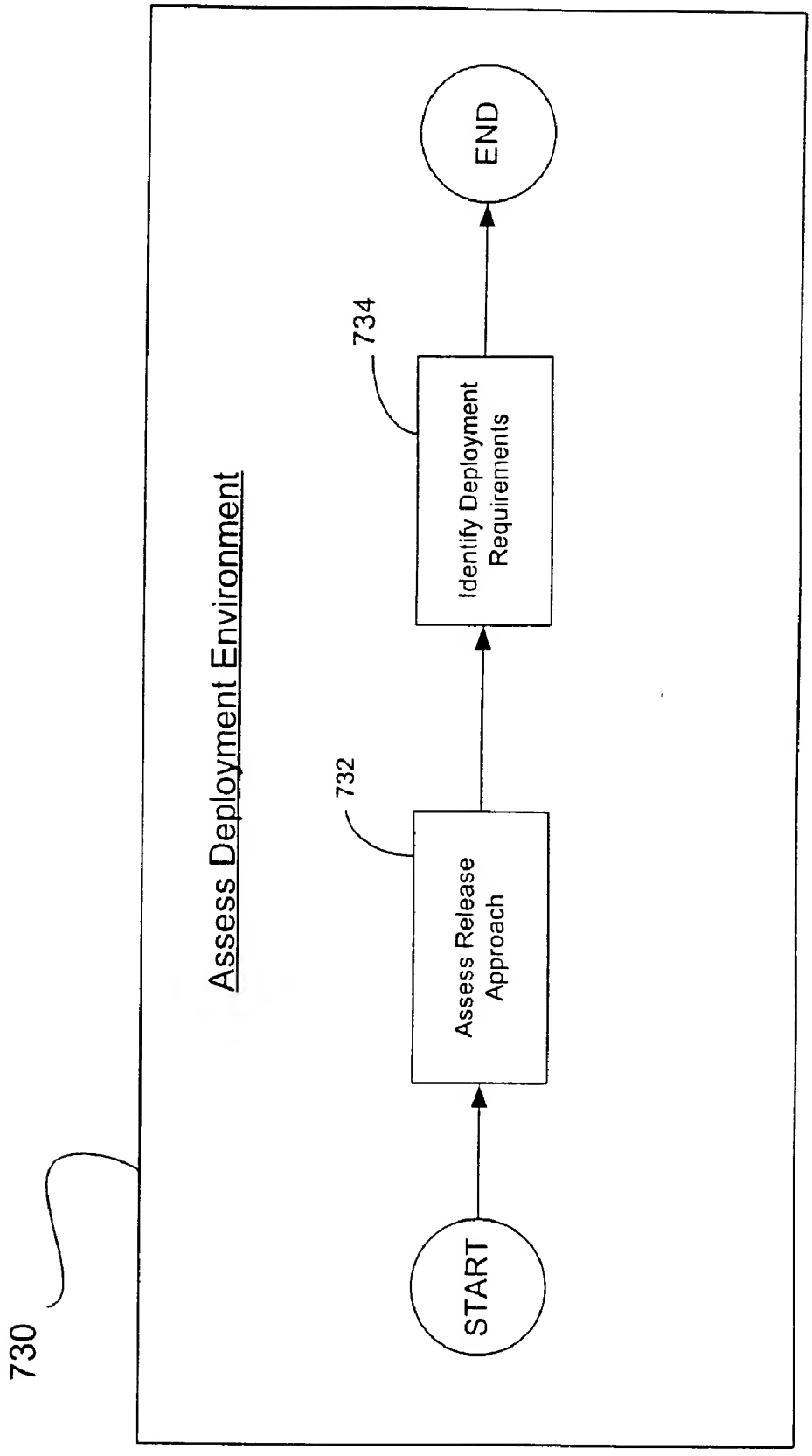

730
Assess Deployment Environment
START
732
Assess Release Approach
734
Identify Deployment Requirements
END

Fig. 7D

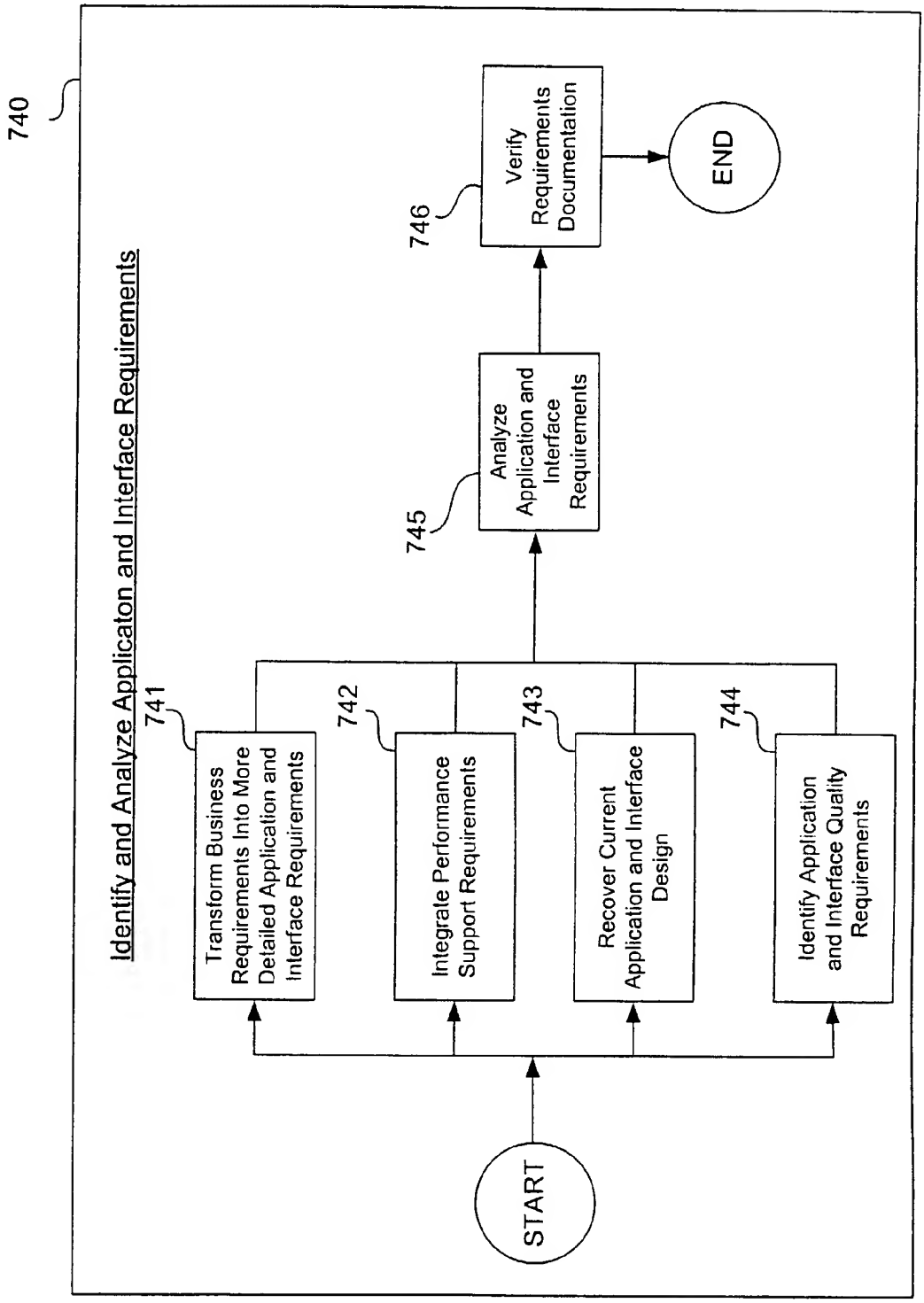

740
Identify and Analyze Applicaton and Interface Requirements
741
Transform Business Requirements Into More Detailed Application and Interface Requirements
742
Integrate Performance Support Requirements
743
Recover Current Application and Interface Design
744
Identify Application and Interface Quality Requirements
START
745
Analyze Application and Interface Requirements
746
Verify Requirements Documentation
END

Fig. 7E

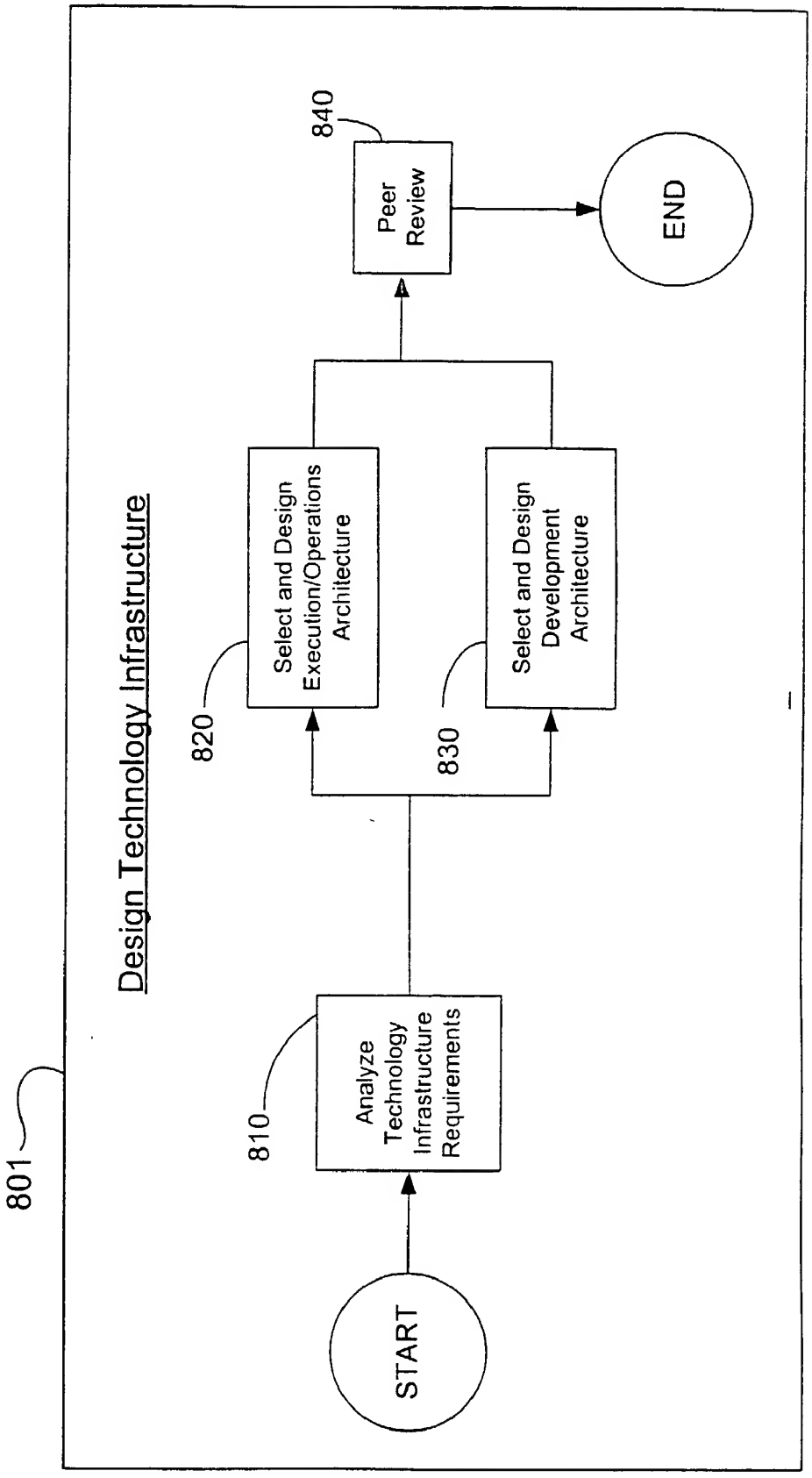

801
Design Technology Infrastructure
START
810
Analyze Technology Infrastructure Requirements
820
Select and Design Execution/Operations Architecture
830
Select and Design Development Architecture
840
Peer Review
END

Fig. 8A

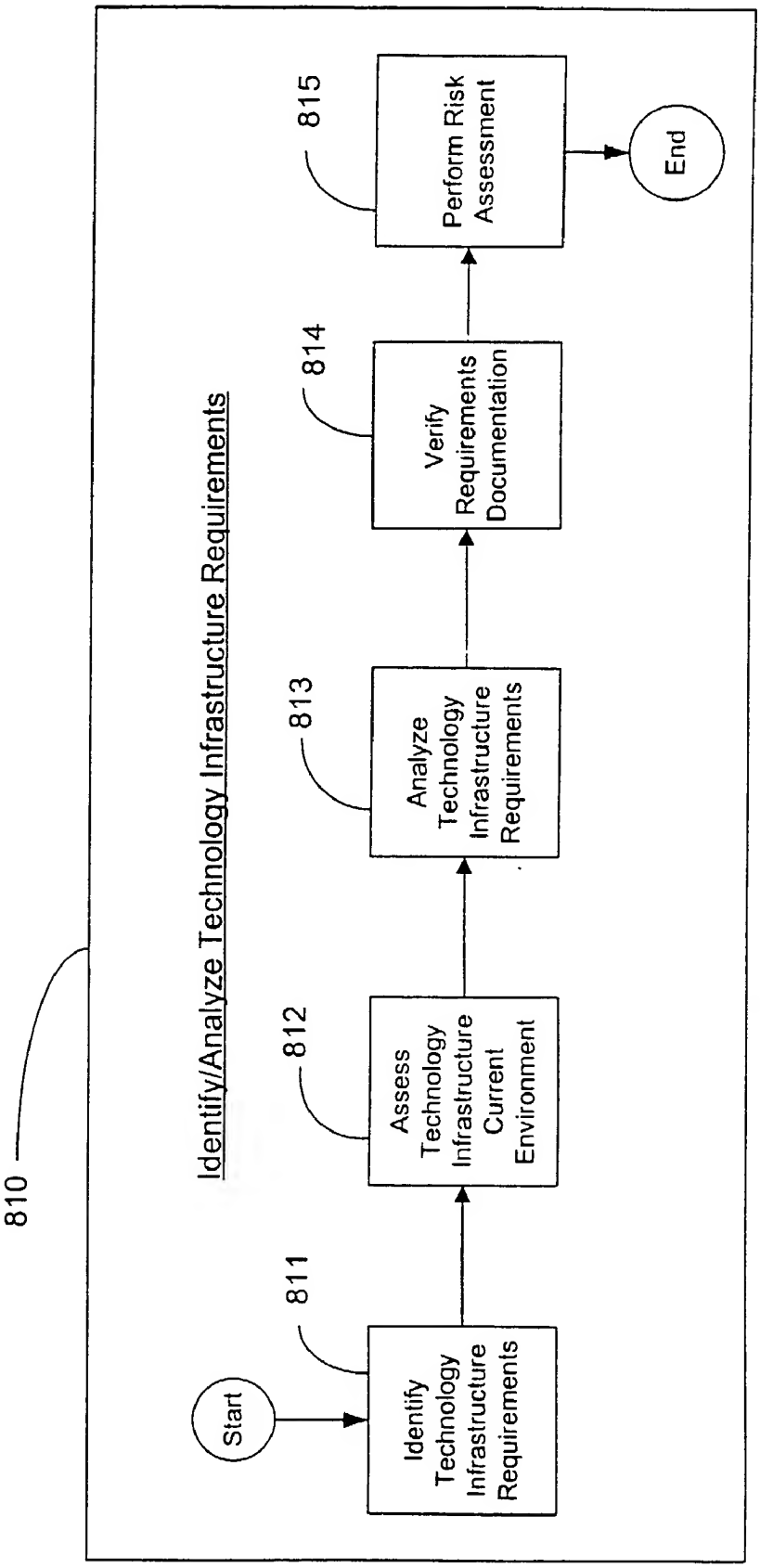

810
Identify/Analyze Technology Infrastructure Requirements
Start
811
Identify Technology Infrastructure Requirements
812
Assess Technology Infrastructure Current Environment
813
Analyze Technology Infrastructure Requirements
814
Verify Requirements Documentation
815
Perform Risk Assessment
End

Fig. 8B

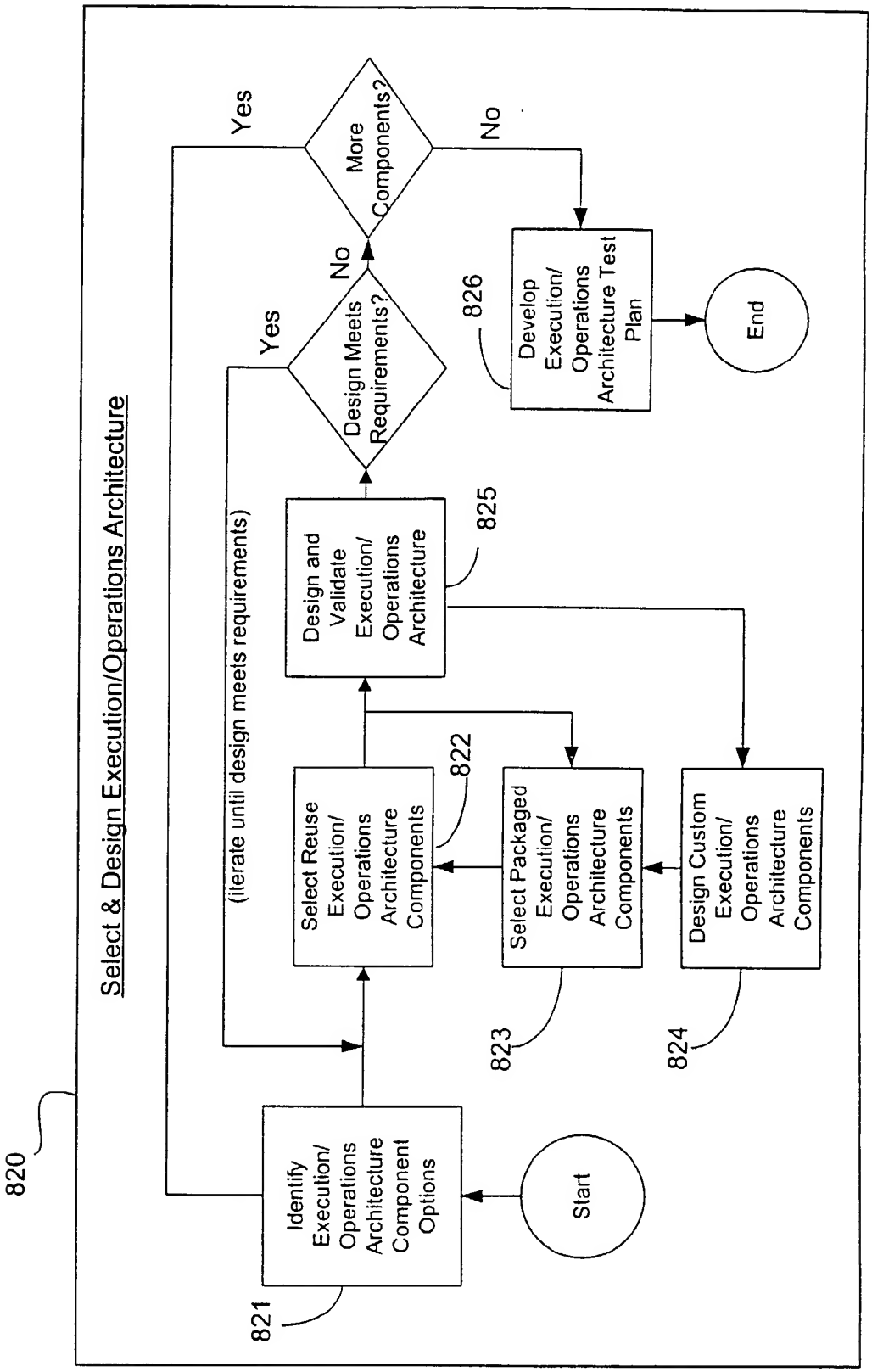

820
Select & Design Execution/Operations Architecture
Start
Identify Execution/ Operations Architecture Component Options
821
Select Reuse Execution/ Operations Architecture Components
822
Select Packaged Execution/ Operations Architecture Components
823
Design Custom Execution/ Operations Architecture Components
824
Design and Validate Execution/ Operations Architecture
825
(iterate until design meets requirements)
Design Meets Requirements?
Yes
No
More Components?
Yes
No
826
Develop Execution/ Operations Architecture Test Plan
End

Fig. 8C

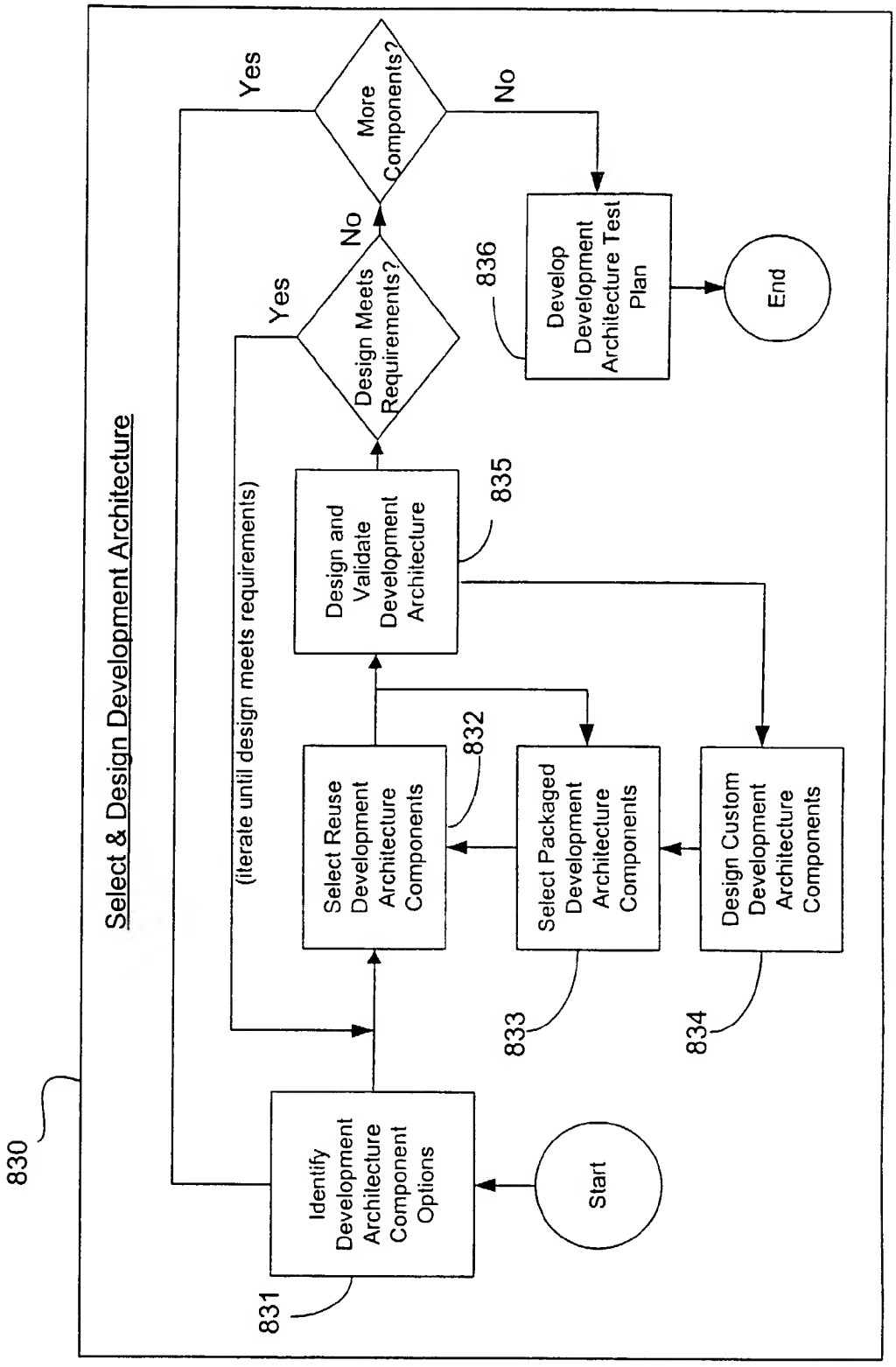

Select & Design Development Architecture
830
Start
Identify Development Architecture Component Options
831
Select Reuse Development Architecture Components
832
Select Packaged Development Architecture Components
833
Design Custom Development Architecture Components
834
Design and Validate Development Architecture
835
(iterate until design meets requirements)
Design Meets Requirements?
Yes
No
More Components?
Yes
No
Develop Development Architecture Test Plan
836
End

Fig. 8D

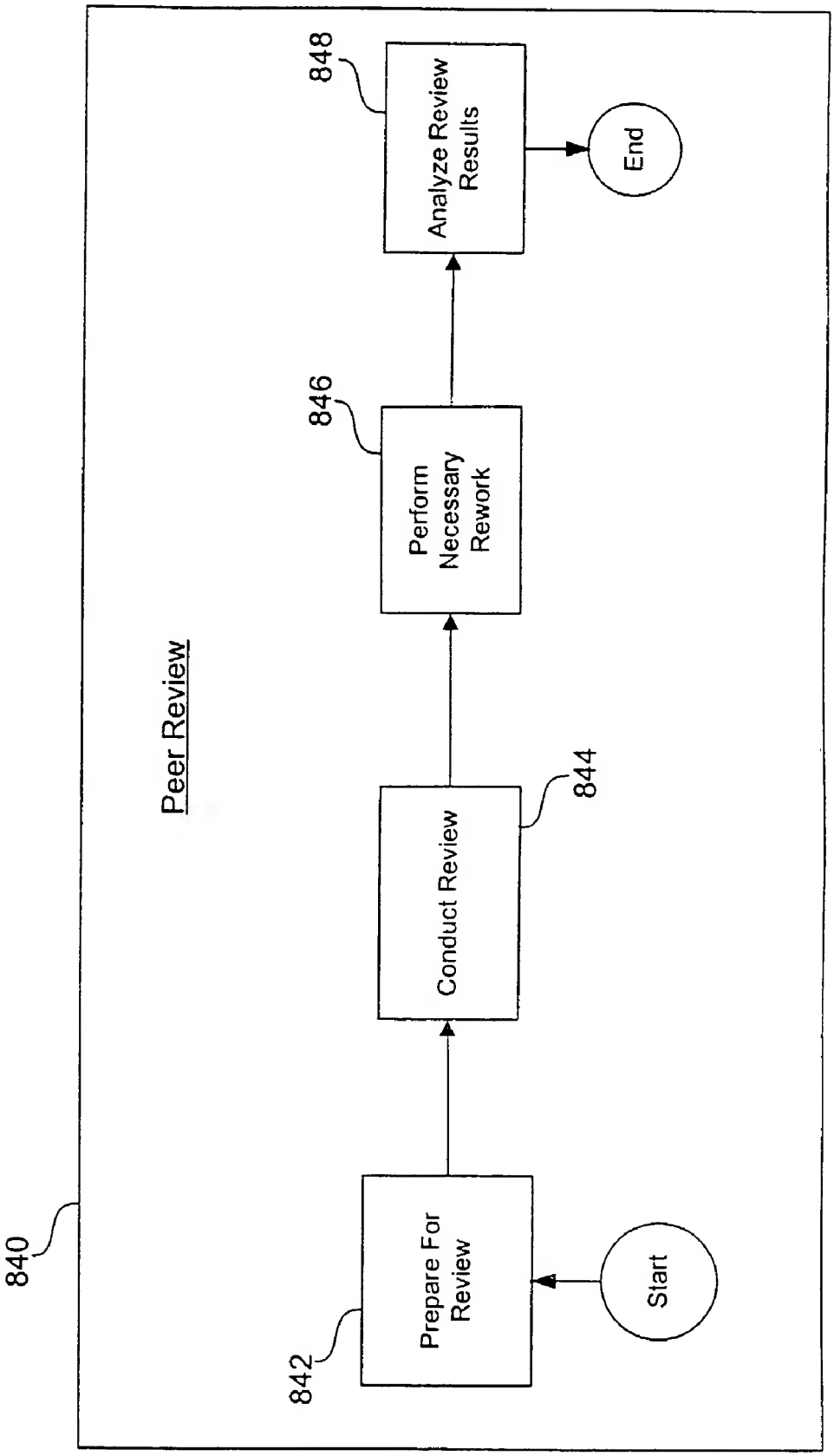

840
Peer Review
Start
Prepare For Review
842
Conduct Review
844
Perform Necessary Rework
846
Analyze Review Results
848
End

Fig. 8E

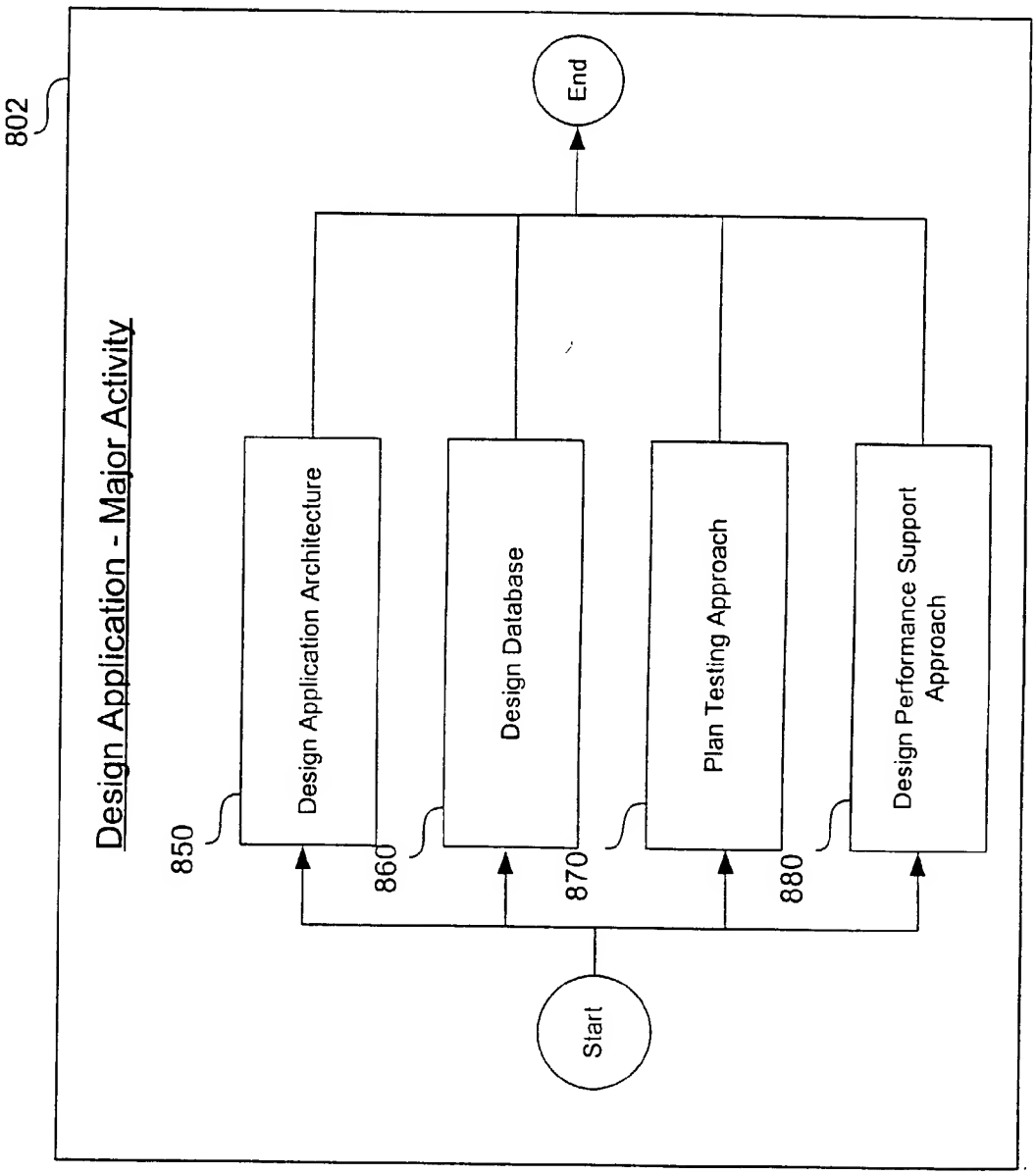

802
Design Application - Major Activity
End
Start
Design Application Architecture
Design Database
Plan Testing Approach
Design Performance Support Approach
850
860
870
880

Fig. 8F

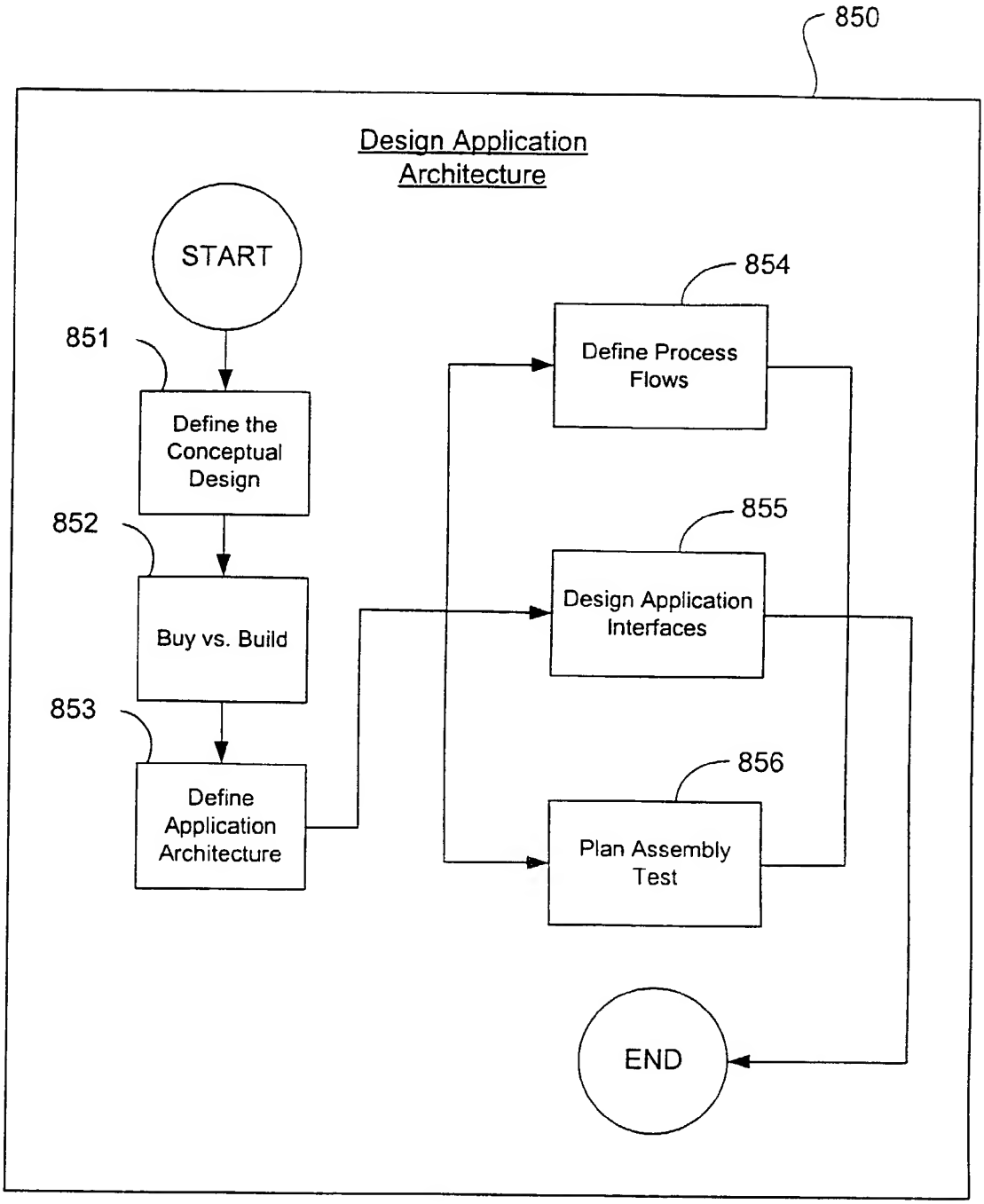

850
Design Application Architecture
START
851
Define the Conceptual Design
852
Buy vs. Build
853
Define Application Architecture
854
Define Process Flows
855
Design Application Interfaces
856
Plan Assembly Test
END

Fig. 8G

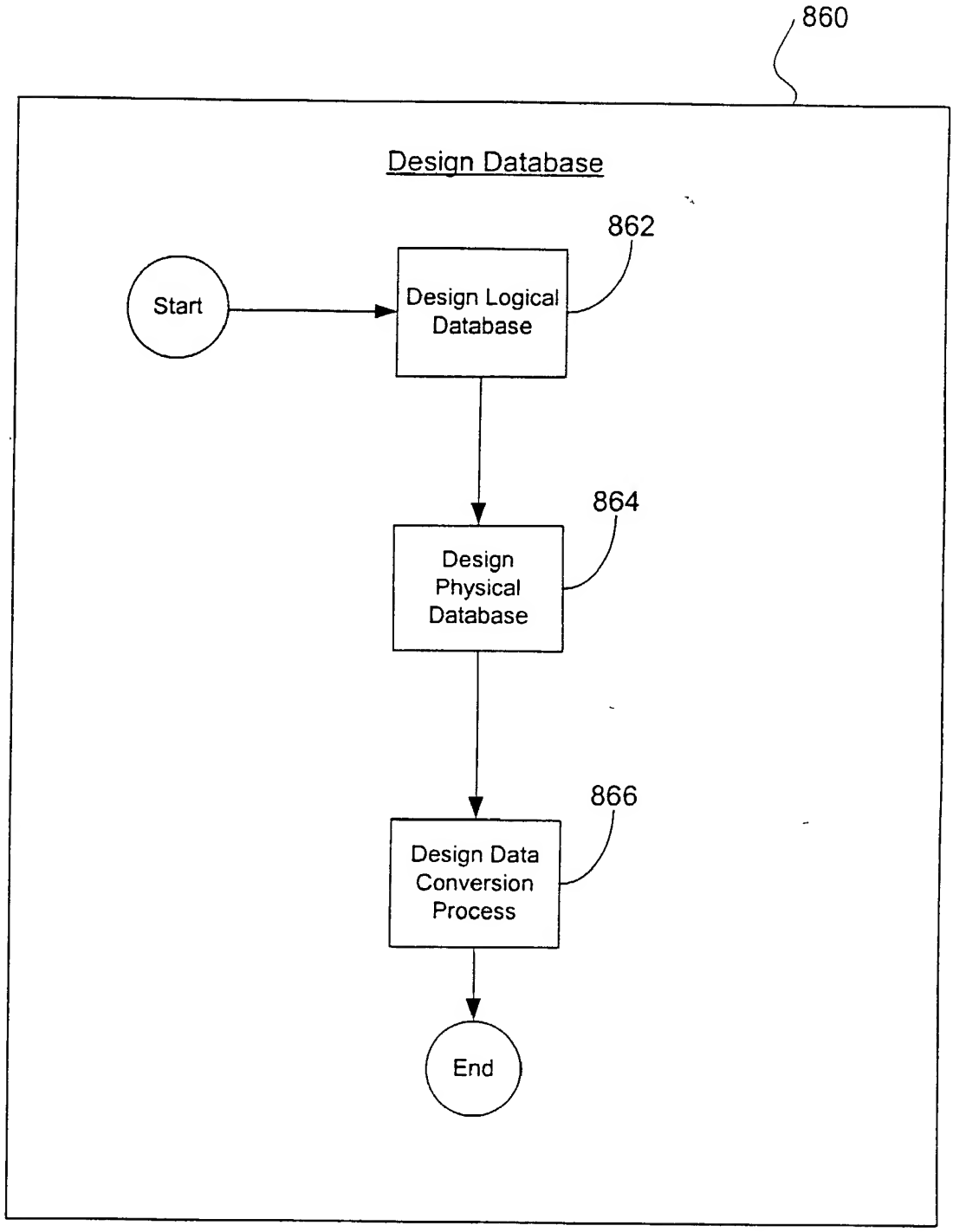

860
Design Database
862
Start
Design Logical Database
864
Design Physical Database
866
Design Data Conversion Process
End

Fig. 8H

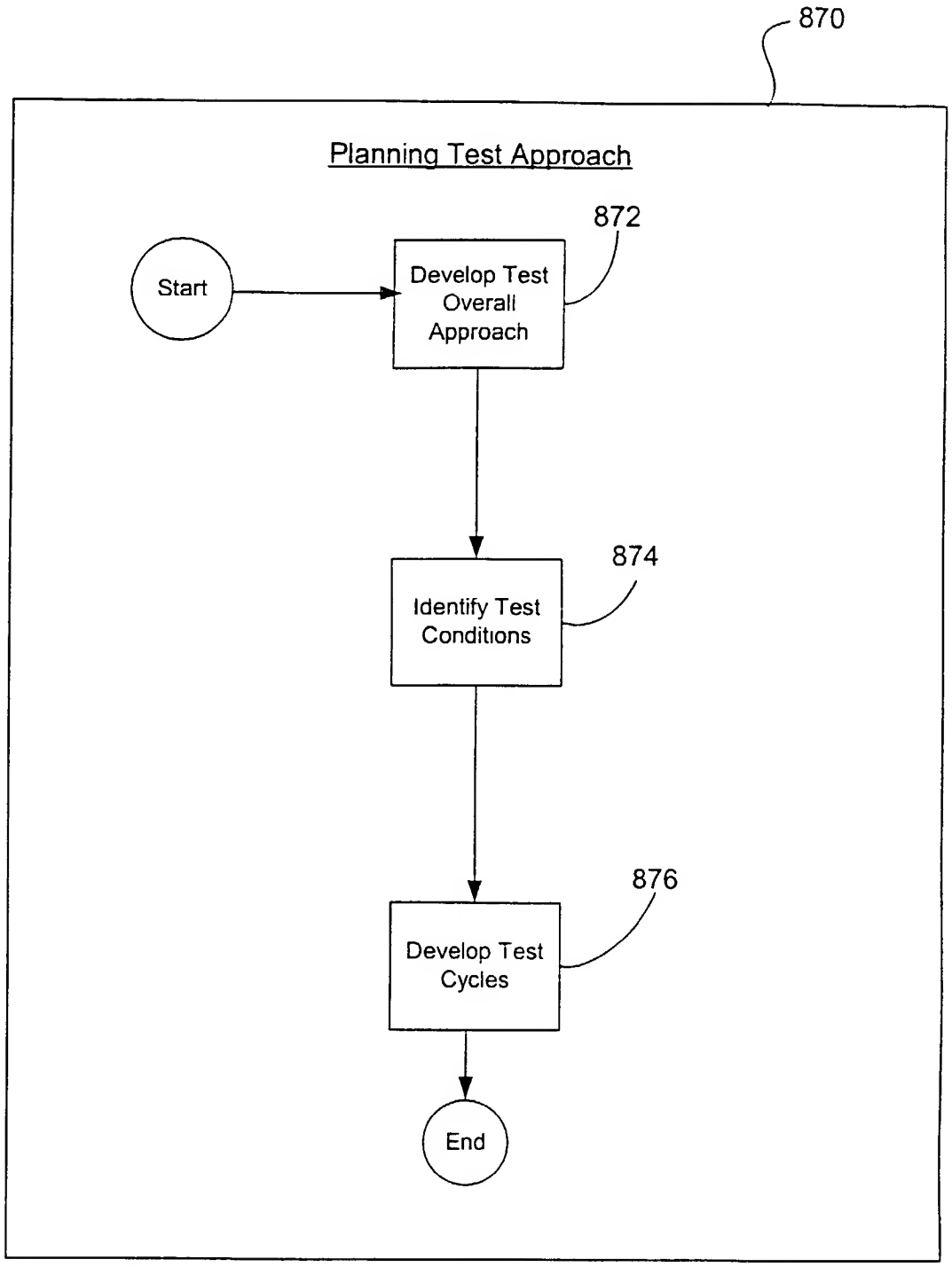

870
Planning Test Approach
872
Start
Develop Test Overall Approach
874
Identify Test Conditions
876
Develop Test Cycles
End

Fig. 8I

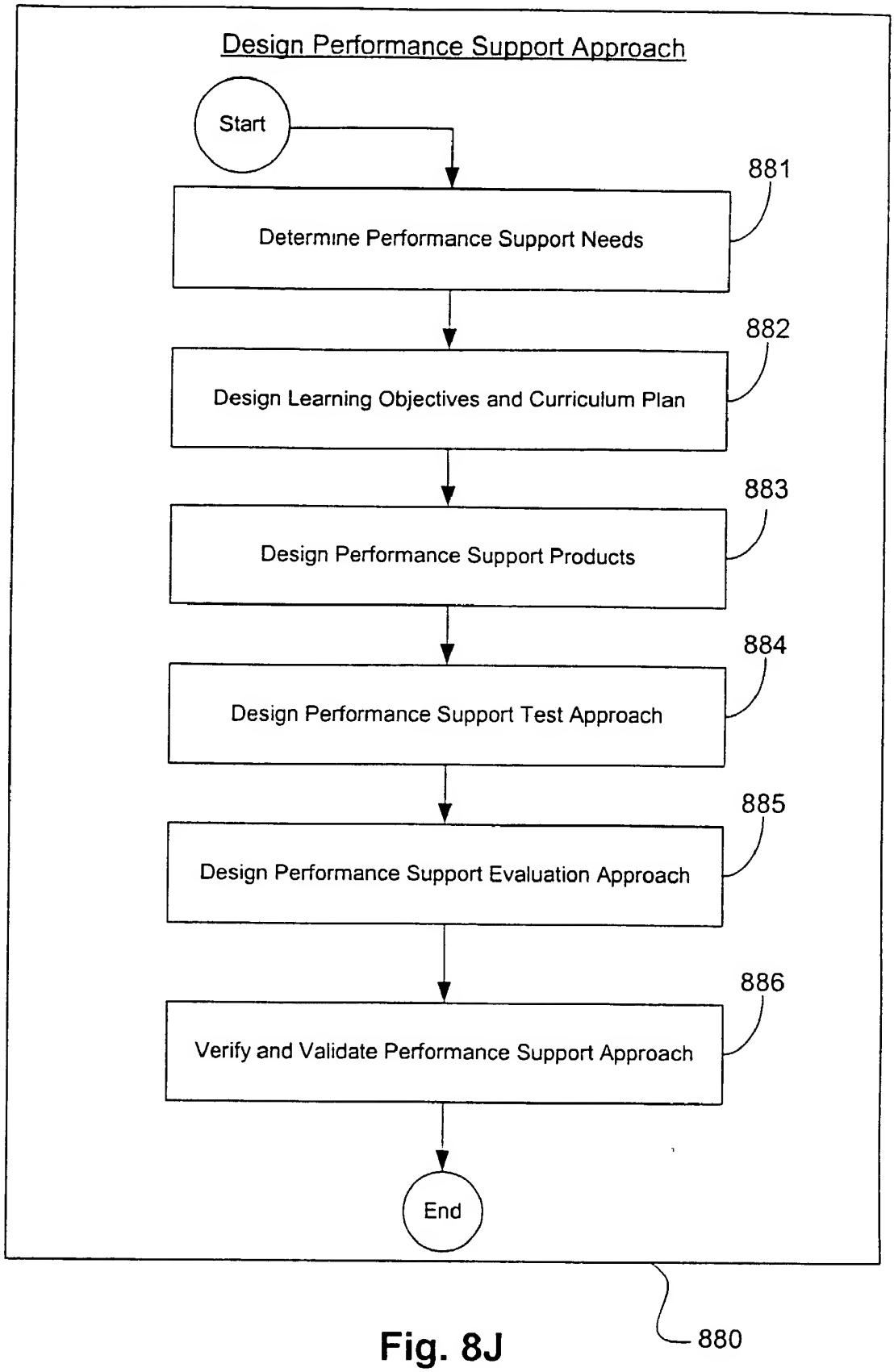

Design Performance Support Approach
Start
881
Determine Performance Support Needs
882
Design Learning Objectives and Curriculum Plan
883
Design Performance Support Products
884
Design Performance Support Test Approach
885
Design Performance Support Evaluation Approach
886
Verify and Validate Performance Support Approach
End
880

Fig. 8J

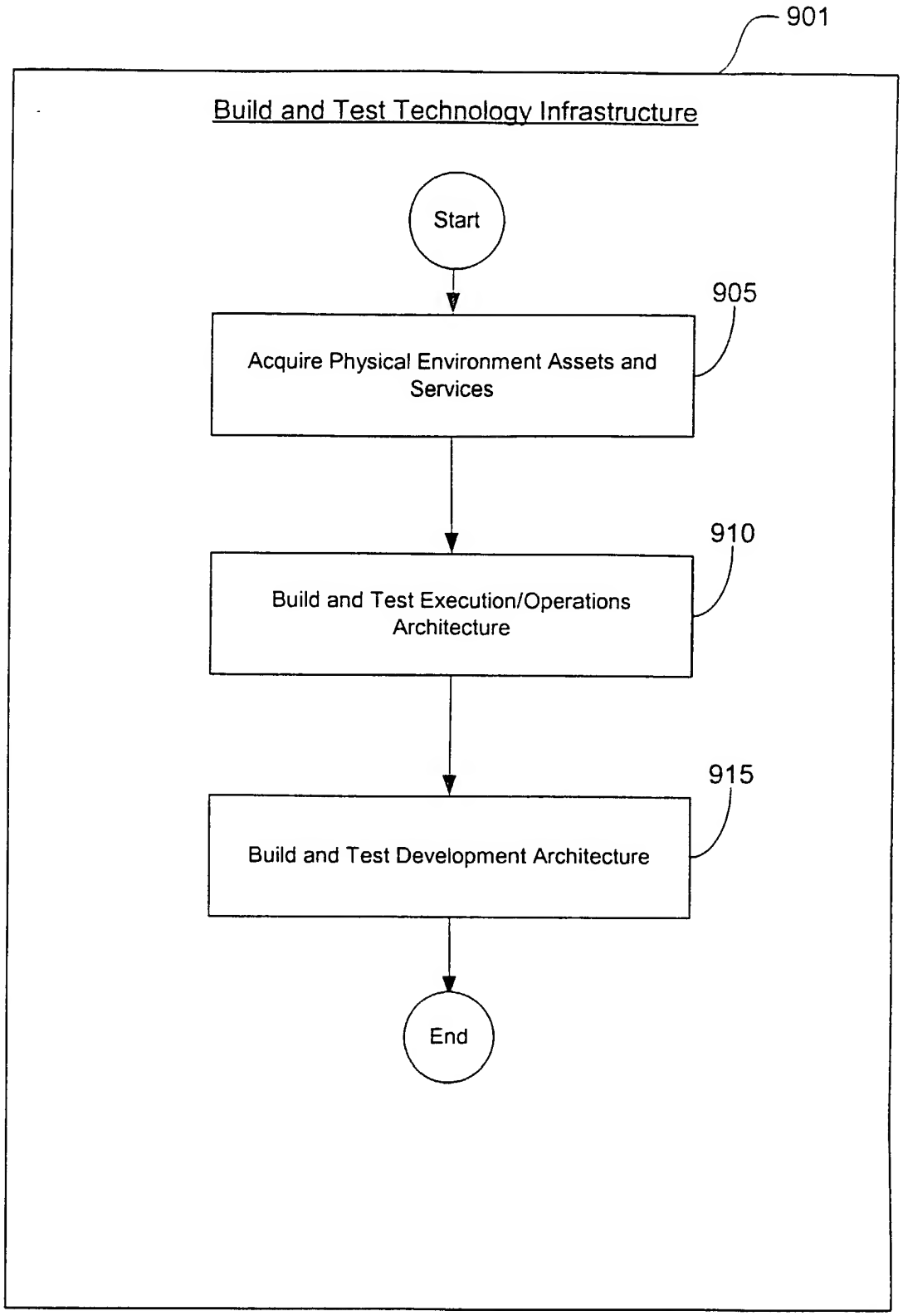

901
Build and Test Technology Infrastructure
Start
905
Acquire Physical Environment Assets and Services
910
Build and Test Execution/Operations Architecture
915
Build and Test Development Architecture
End

Fig. 9A

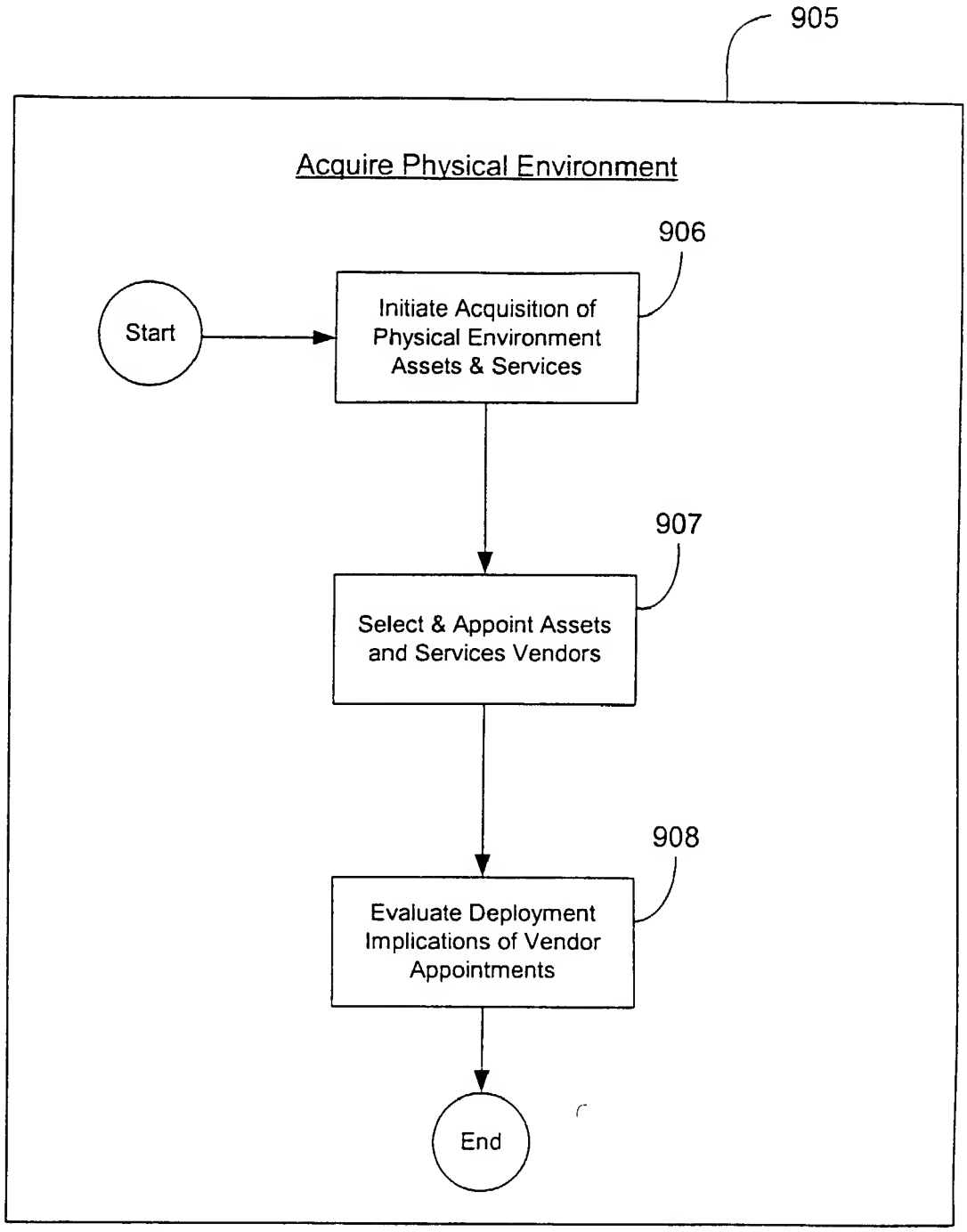

905
Acquire Physical Environment
906
Start
Initiate Acquisition of Physical Environment Assets & Services
907
Select & Appoint Assets and Services Vendors
908
Evaluate Deployment Implications of Vendor Appointments
End

Fig. 9B

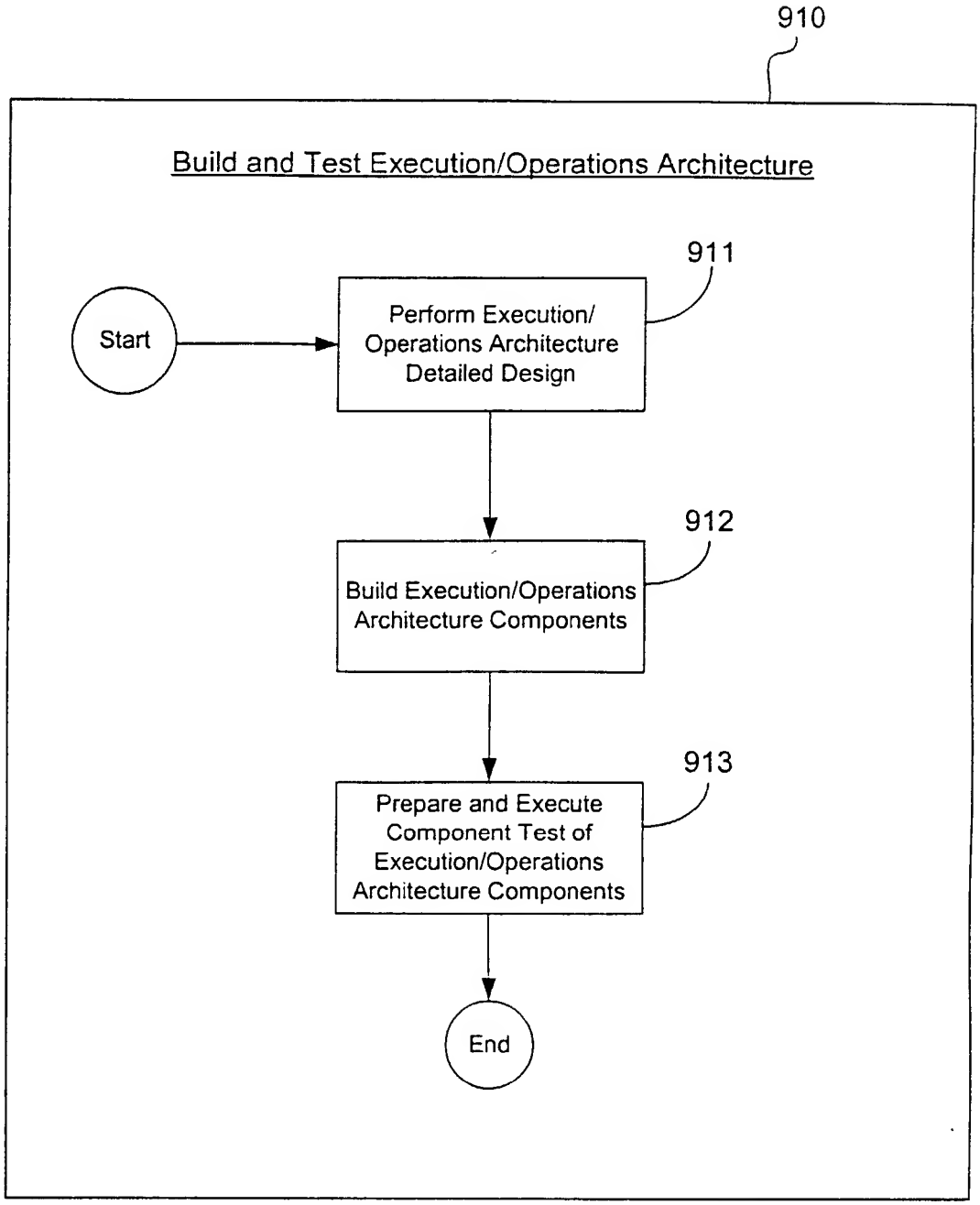

910
Build and Test Execution/Operations Architecture
911
Start
Perform Execution/ Operations Architecture Detailed Design
912
Build Execution/Operations Architecture Components
913
Prepare and Execute Component Test of Execution/Operations Architecture Components
End

Fig. 9C

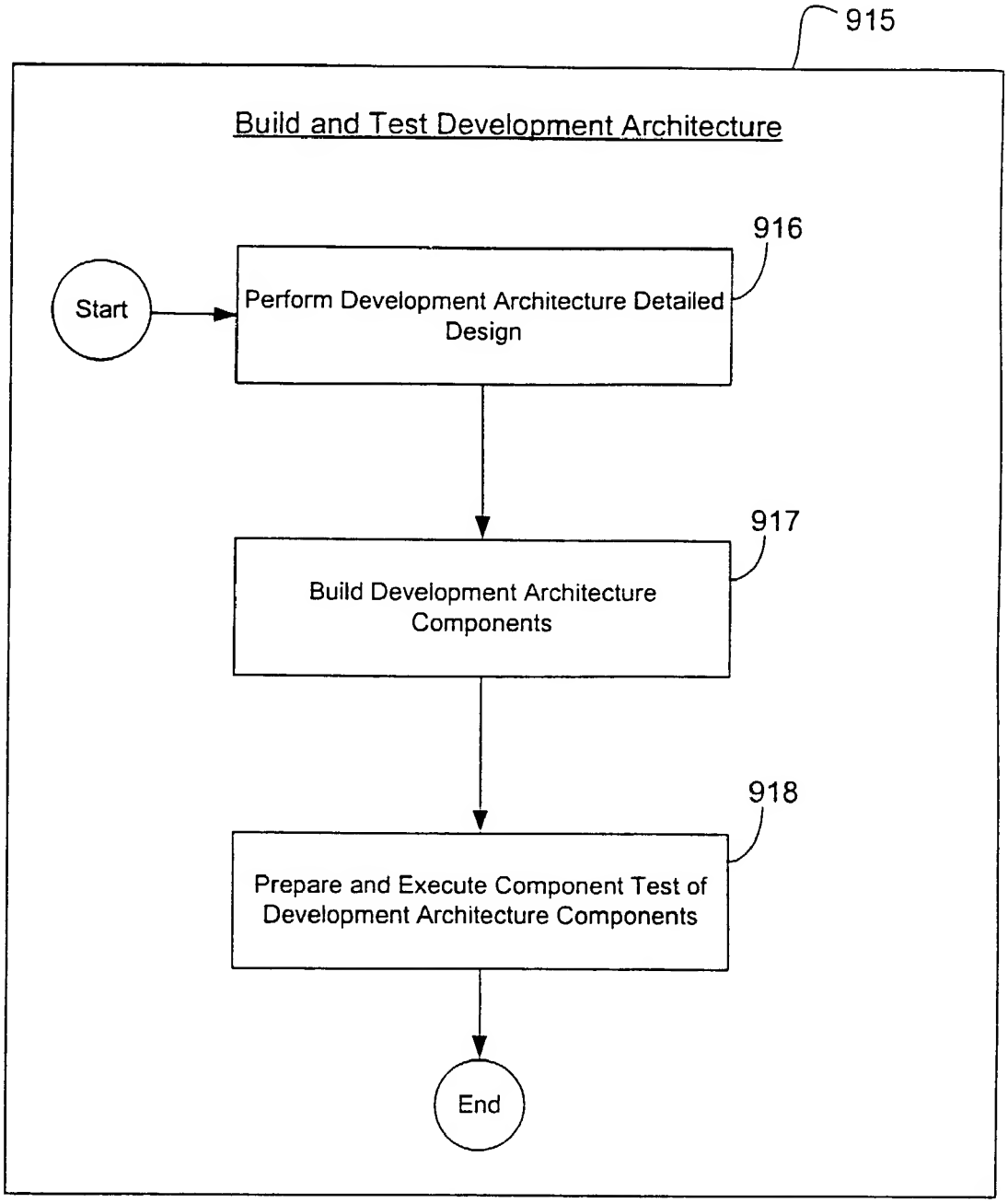

915
Build and Test Development Architecture
916
Start
Perform Development Architecture Detailed Design
917
Build Development Architecture Components
918
Prepare and Execute Component Test of Development Architecture Components
End

Fig. 9D

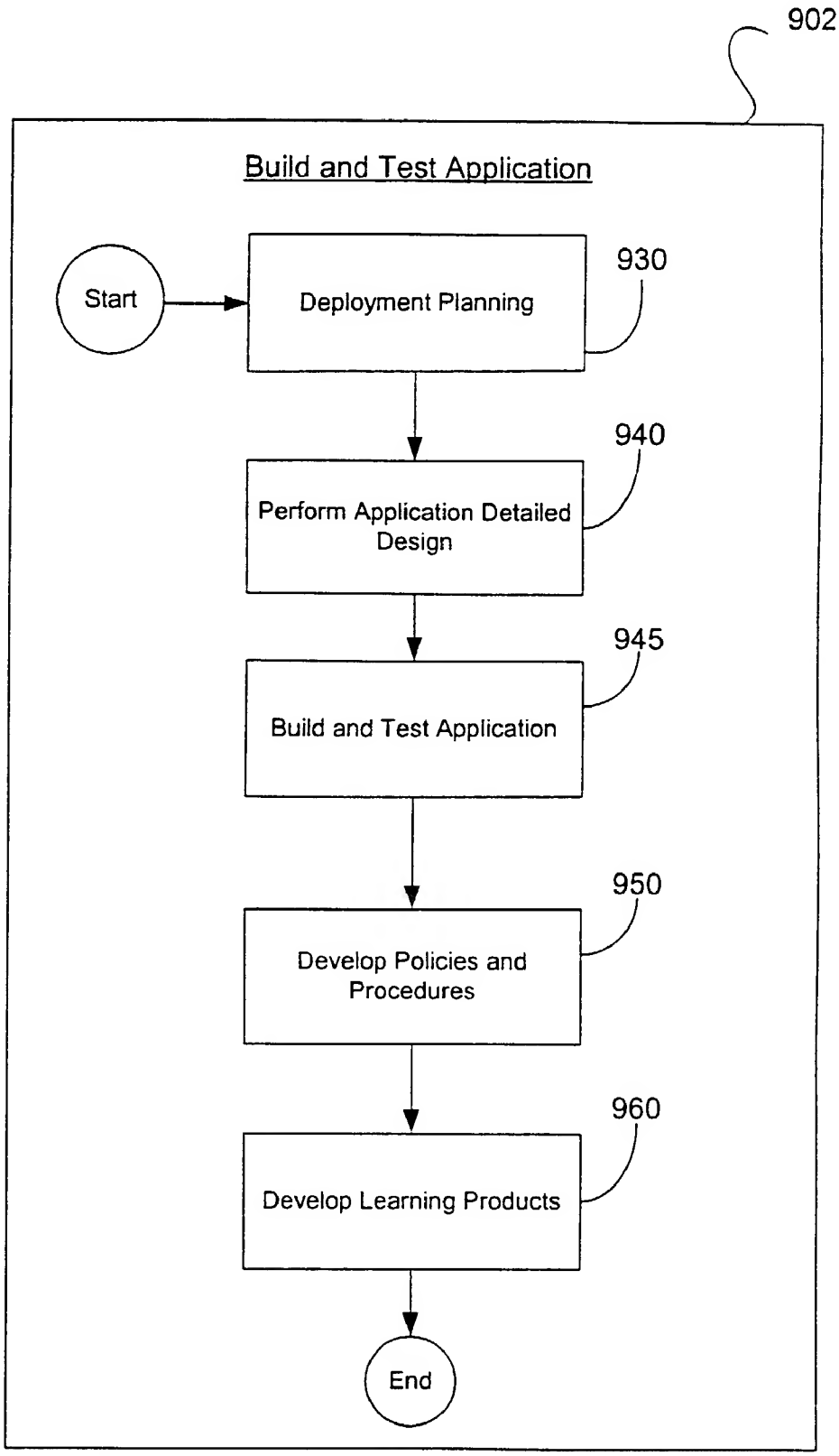

902
Build and Test Application
Start
Deployment Planning
930
Perform Application Detailed Design
940
Build and Test Application
945
Develop Policies and Procedures
950
Develop Learning Products
960
End

Fig. 9E

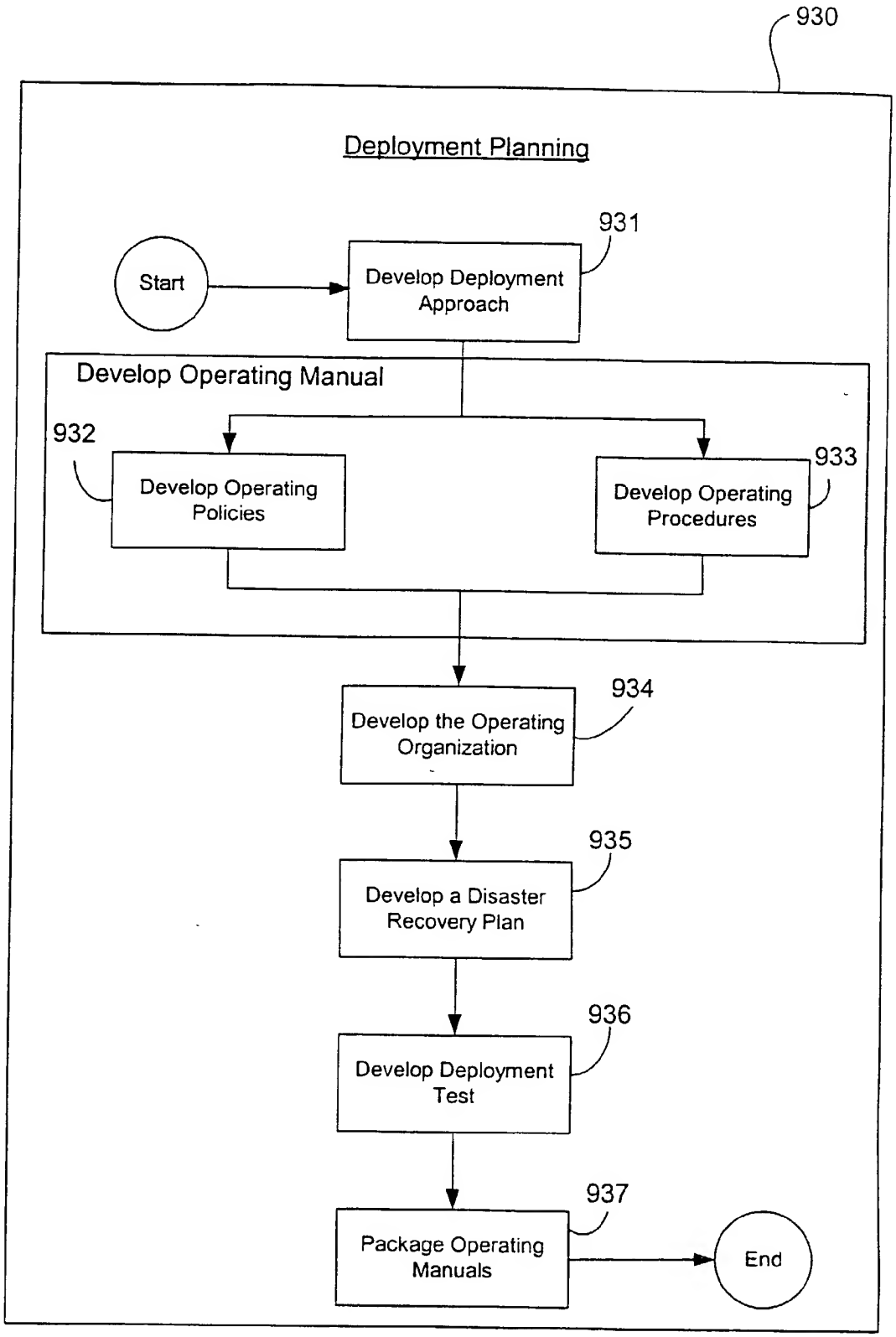

930
Deployment Planning
931
Start
Develop Deployment Approach
Develop Operating Manual
932
Develop Operating Policies
933
Develop Operating Procedures
934
Develop the Operating Organization
935
Develop a Disaster Recovery Plan
936
Develop Deployment Test
937
Package Operating Manuals
End

Fig. 9F

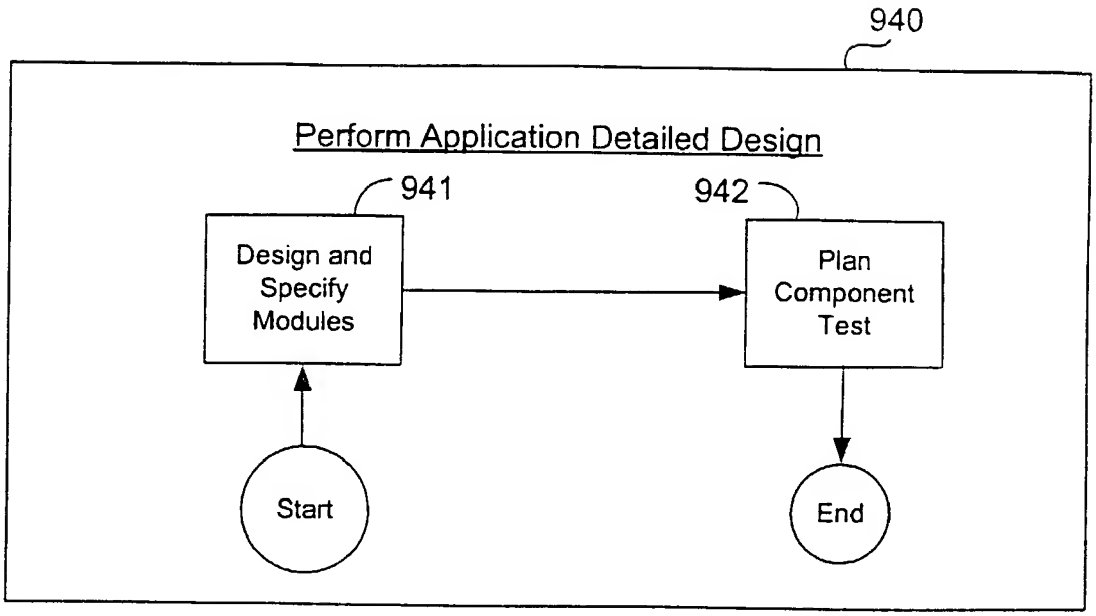

940
Perform Application Detailed Design
941
942
Design and Specify Modules
Plan Component Test
Start
End

Fig. 9G

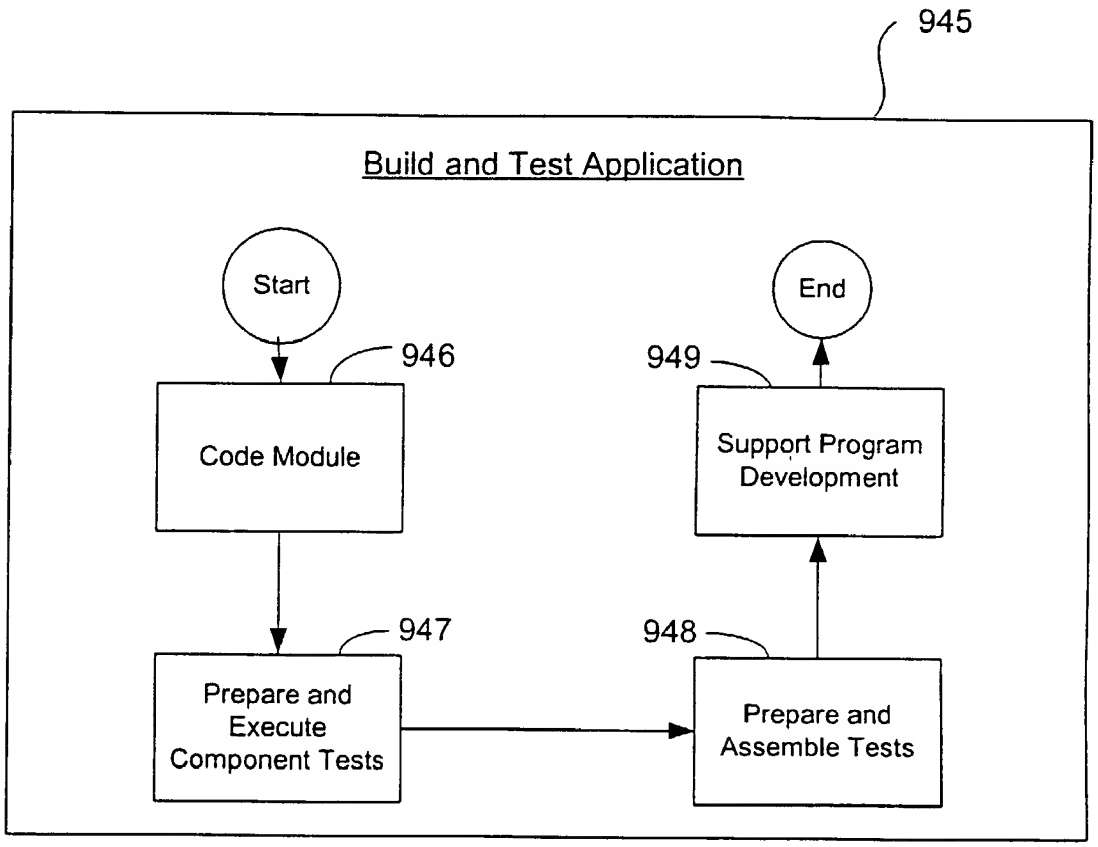

945
Build and Test Application
Start
End
946
949
Code Module
Support Program Development
947
948
Prepare and Execute Component Tests
Prepare and Assemble Tests

Fig. 9H

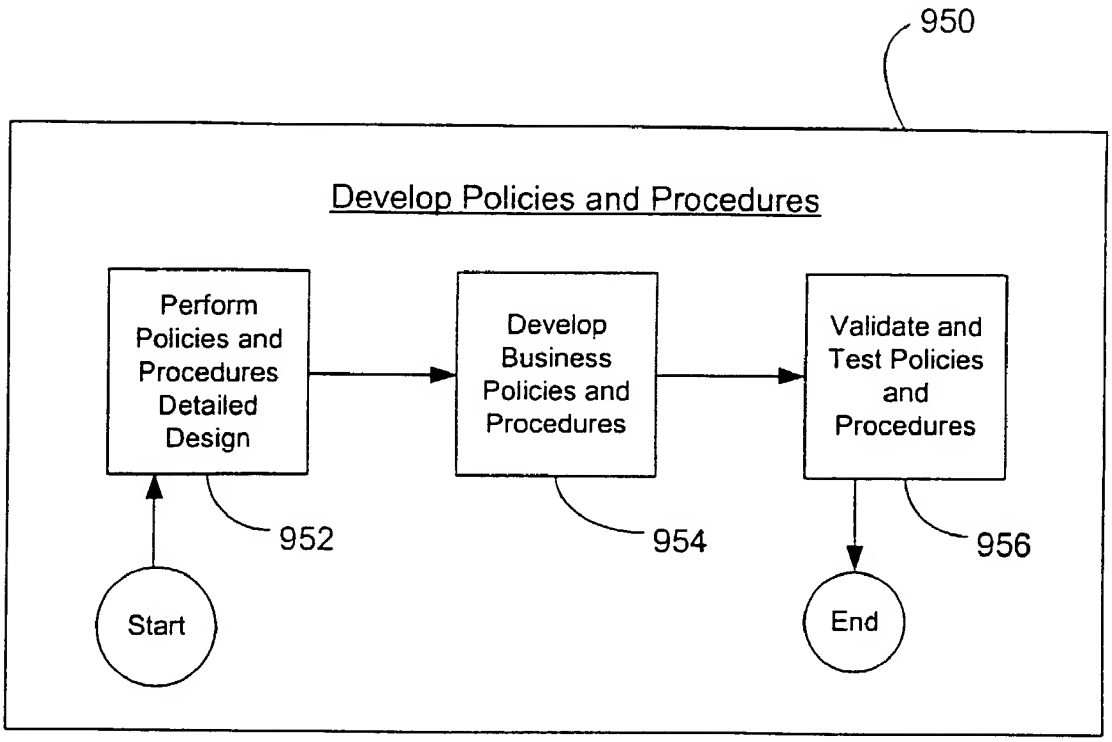

950
Develop Policies and Procedures
Perform Policies and Procedures Detailed Design
Develop Business Policies and Procedures
Validate and Test Policies and Procedures
952
954
956
Start
End

Fig. 9I

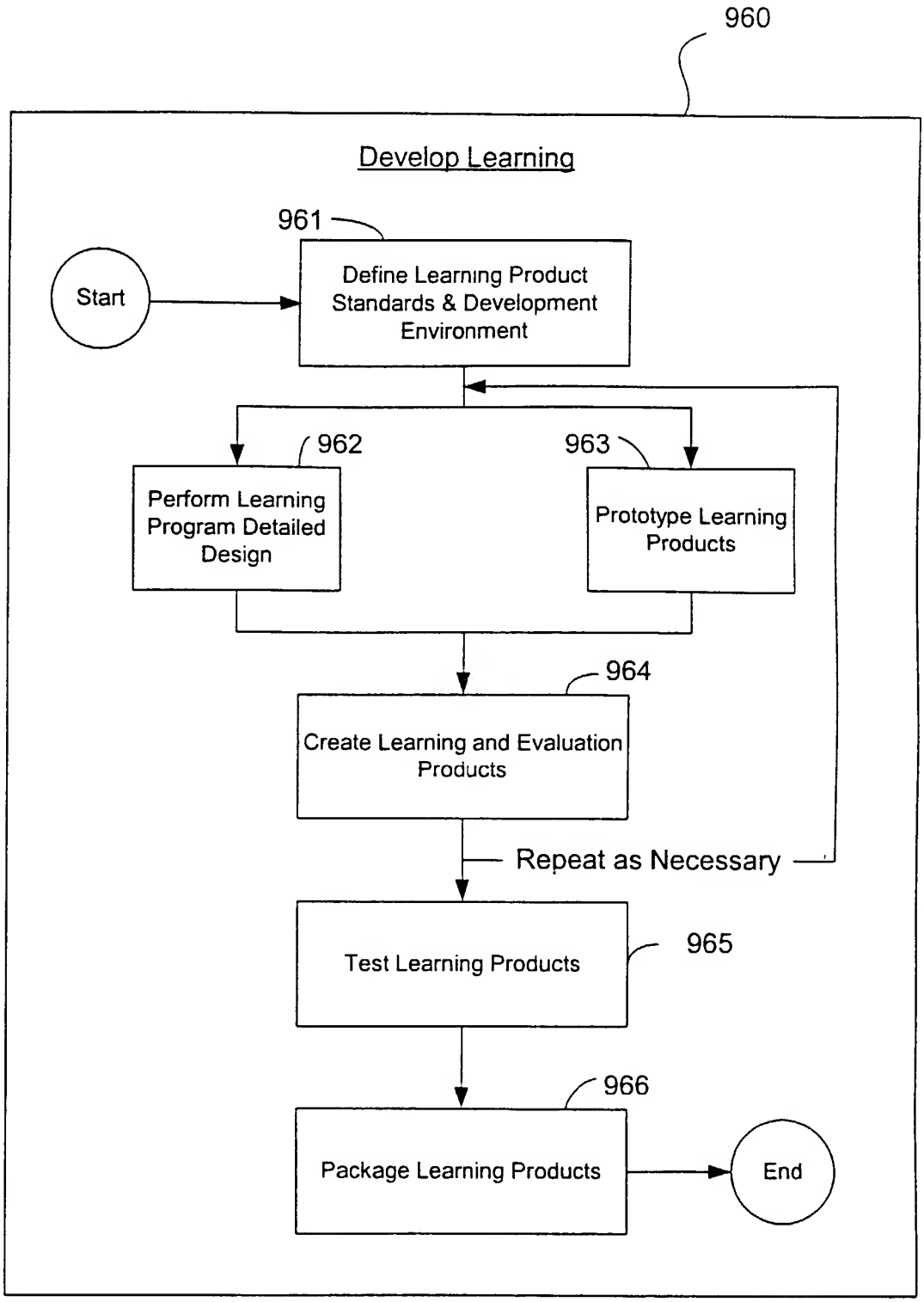

960
Develop Learning
961
Start
Define Learning Product Standards & Development Environment
962
Perform Learning Program Detailed Design
963
Prototype Learning Products
964
Create Learning and Evaluation Products
Repeat as Necessary
Test Learning Products
965
966
Package Learning Products
End

Fig. 9J

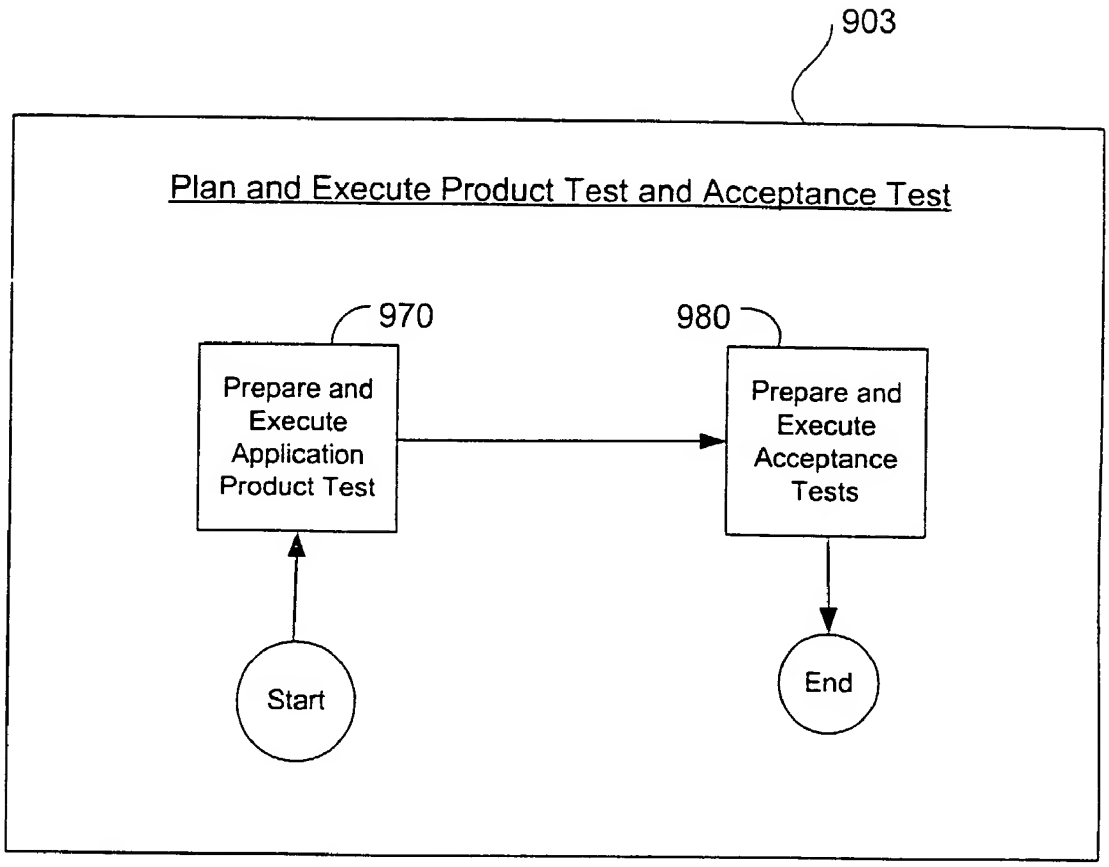

903
Plan and Execute Product Test and Acceptance Test
970
980
Prepare and Execute Application Product Test
Prepare and Execute Acceptance Tests
Start
End

Fig. 9K

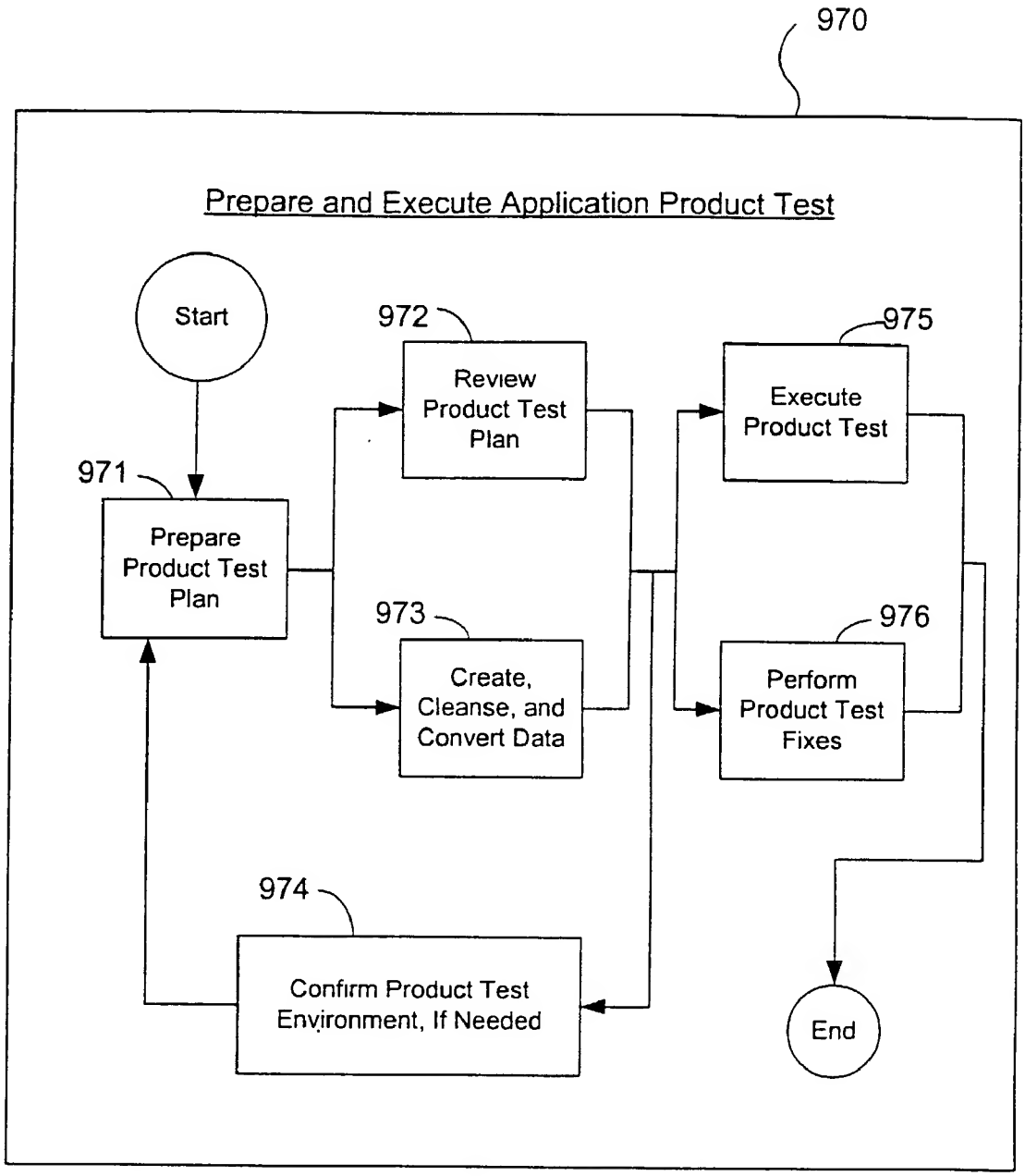

970
Prepare and Execute Application Product Test
Start
971
Prepare Product Test Plan
972
Review Product Test Plan
973
Create, Cleanse, and Convert Data
974
Confirm Product Test Environment, If Needed
975
Execute Product Test
976
Perform Product Test Fixes
End

Fig. 9L

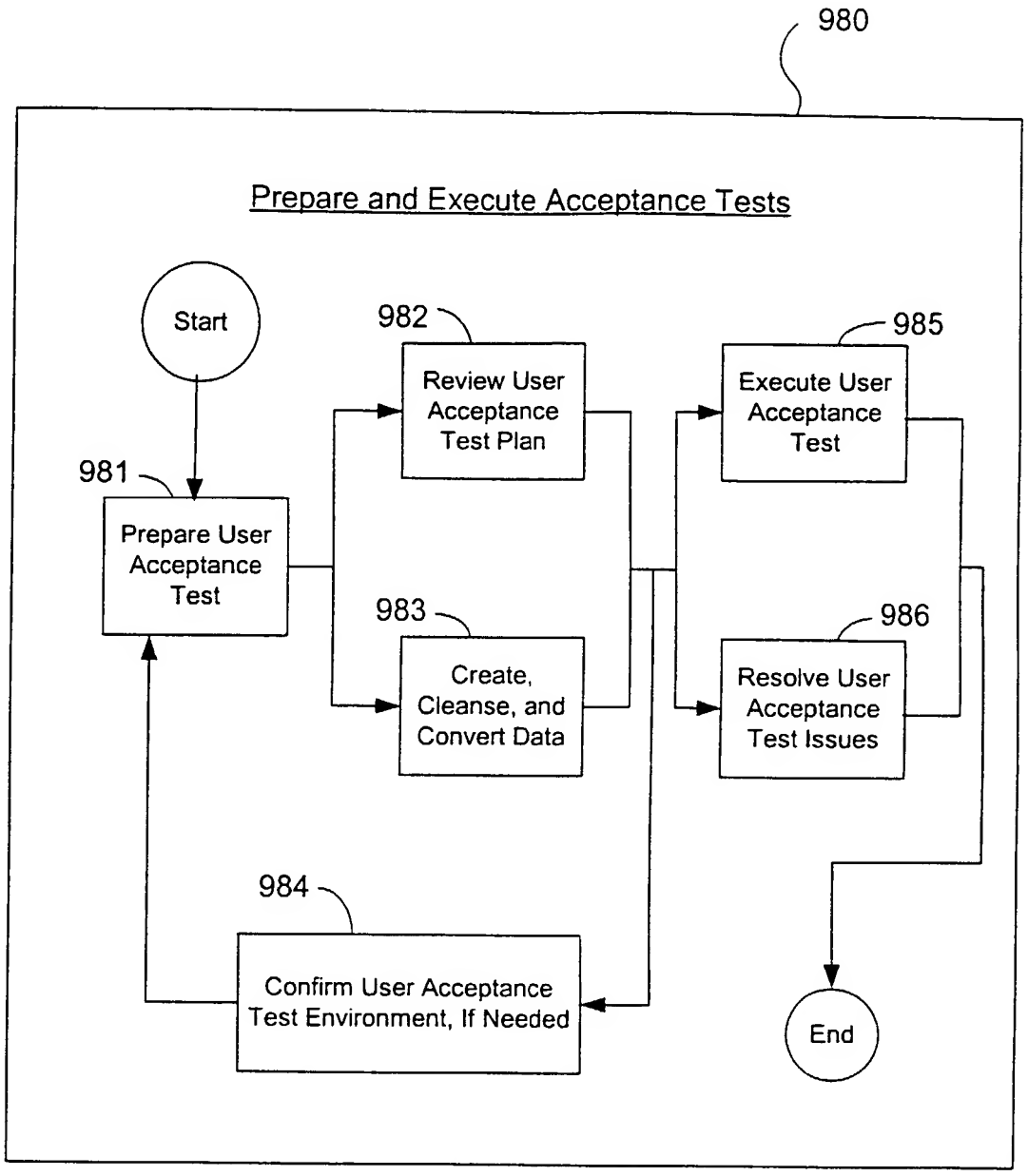

980
Prepare and Execute Acceptance Tests
Start
981
Prepare User Acceptance Test
982
Review User Acceptance Test Plan
983
Create, Cleanse, and Convert Data
984
Confirm User Acceptance Test Environment, If Needed
985
Execute User Acceptance Test
986
Resolve User Acceptance Test Issues
End

Fig. 9M

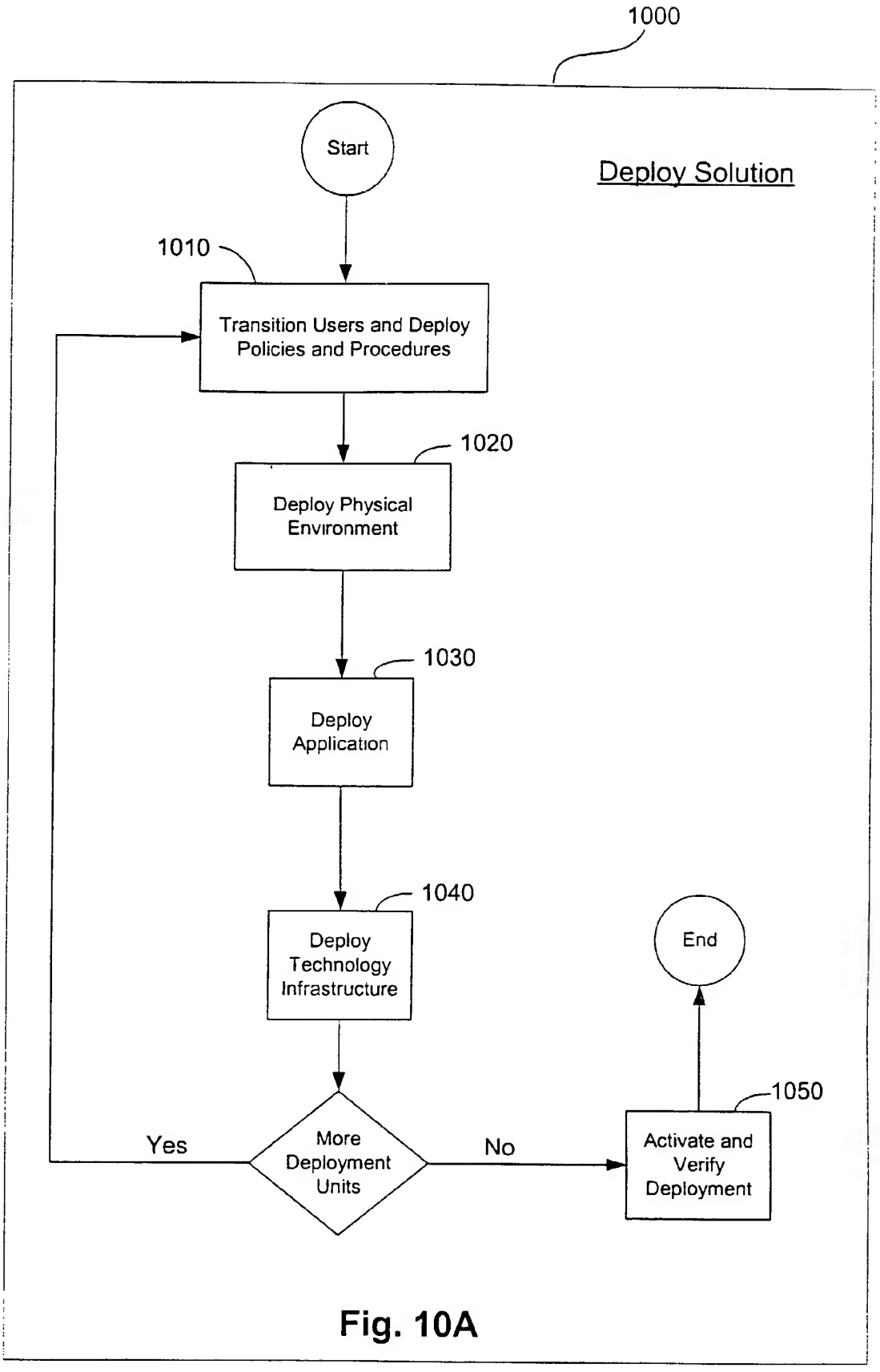

1000
Start
Deploy Solution
1010
Transition Users and Deploy Policies and Procedures
1020
Deploy Physical Environment
1030
Deploy Application
1040
Deploy Technology Infrastructure
End
1050
Activate and Verify Deployment
More Deployment Units
Yes
No

Fig. 10A

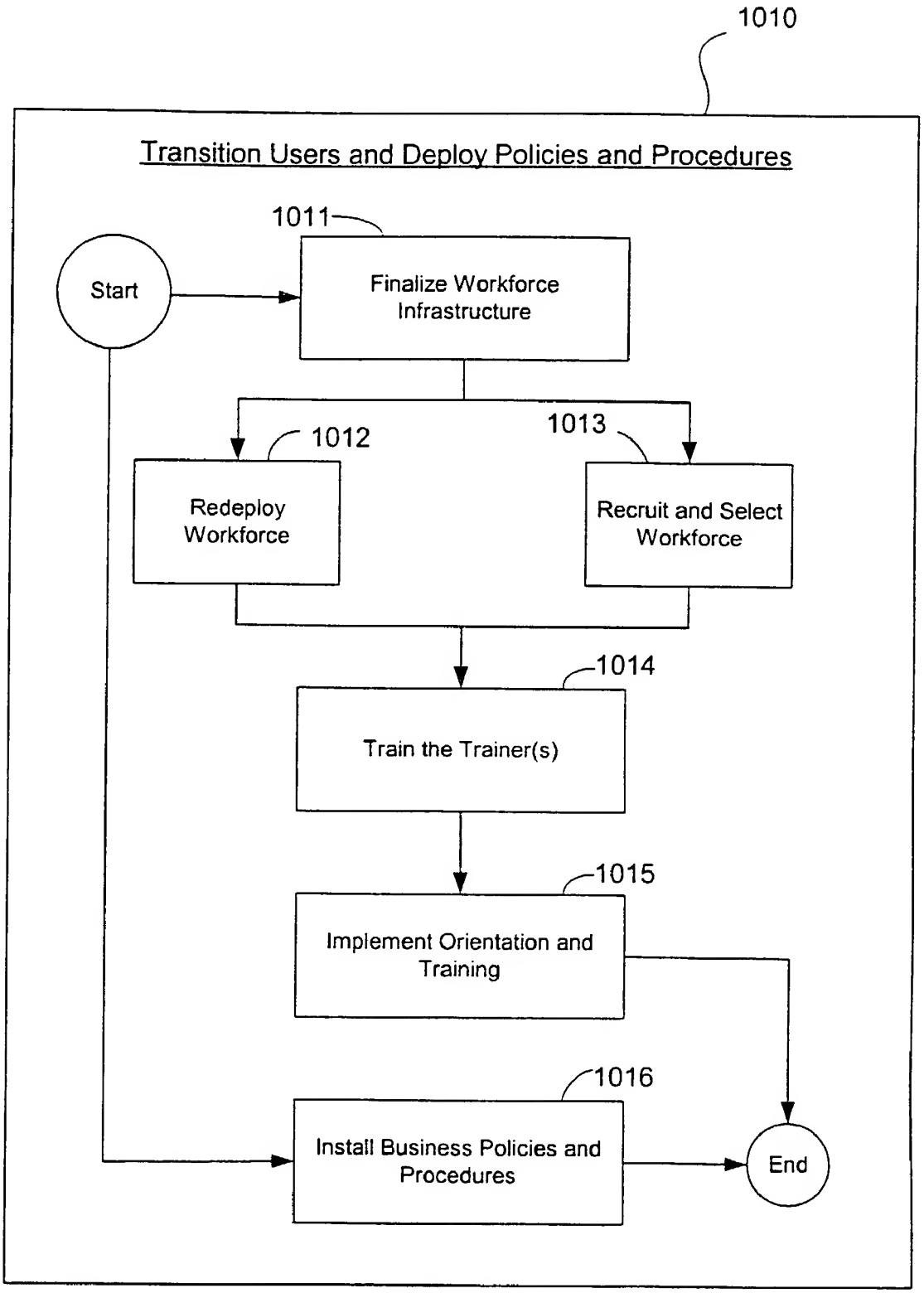

1010
Transition Users and Deploy Policies and Procedures
1011
Start
Finalize Workforce Infrastructure
1012
1013
Redeploy Workforce
Recruit and Select Workforce
1014
Train the Trainer(s)
1015
Implement Orientation and Training
1016
Install Business Policies and Procedures
End

Fig. 10B

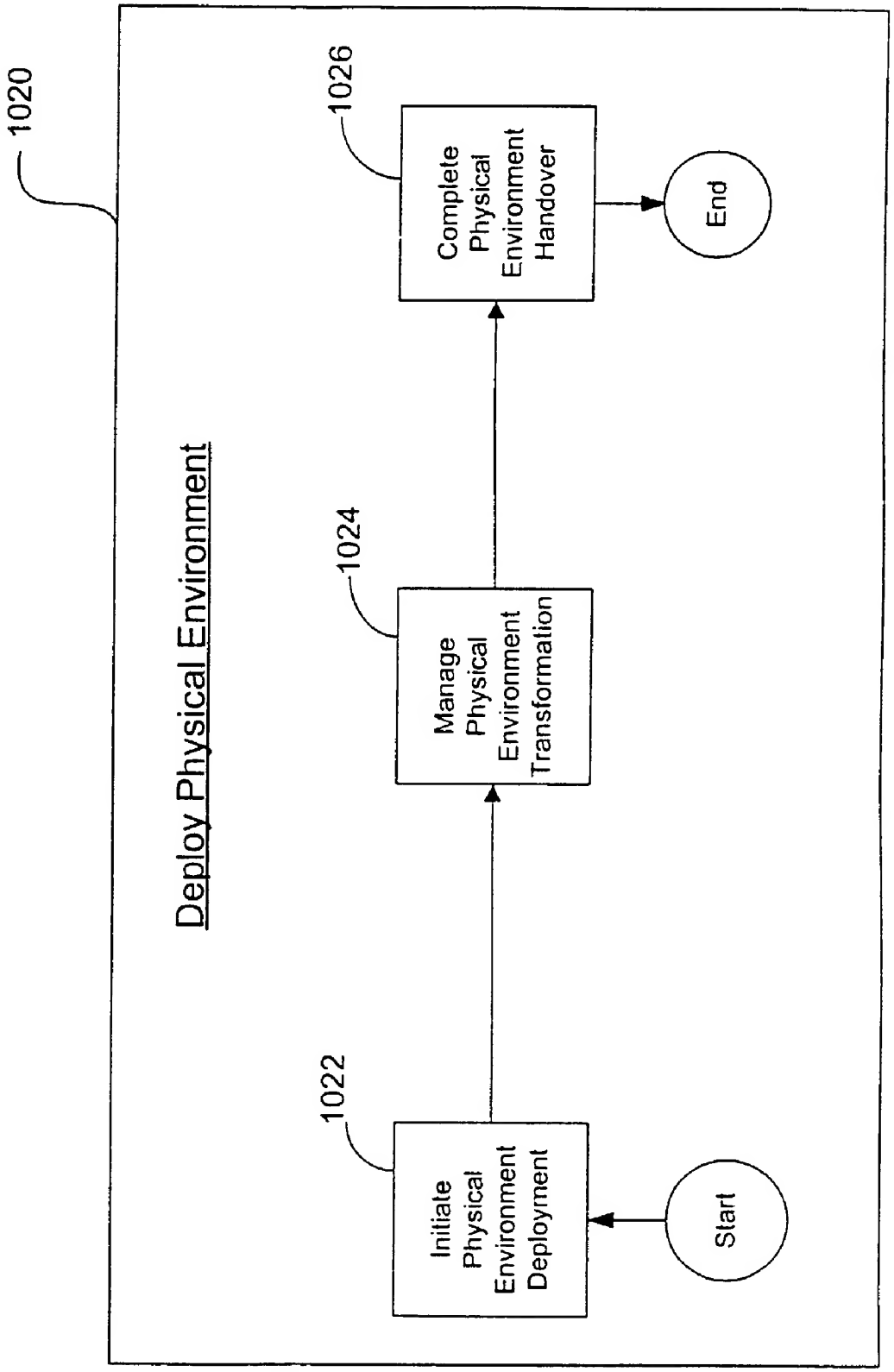

1020
Deploy Physical Environment
1022
Initiate Physical Environment Deployment
Start
1024
Manage Physical Environment Transformation
1026
Complete Physical Environment Handover
End

Fig. 10C

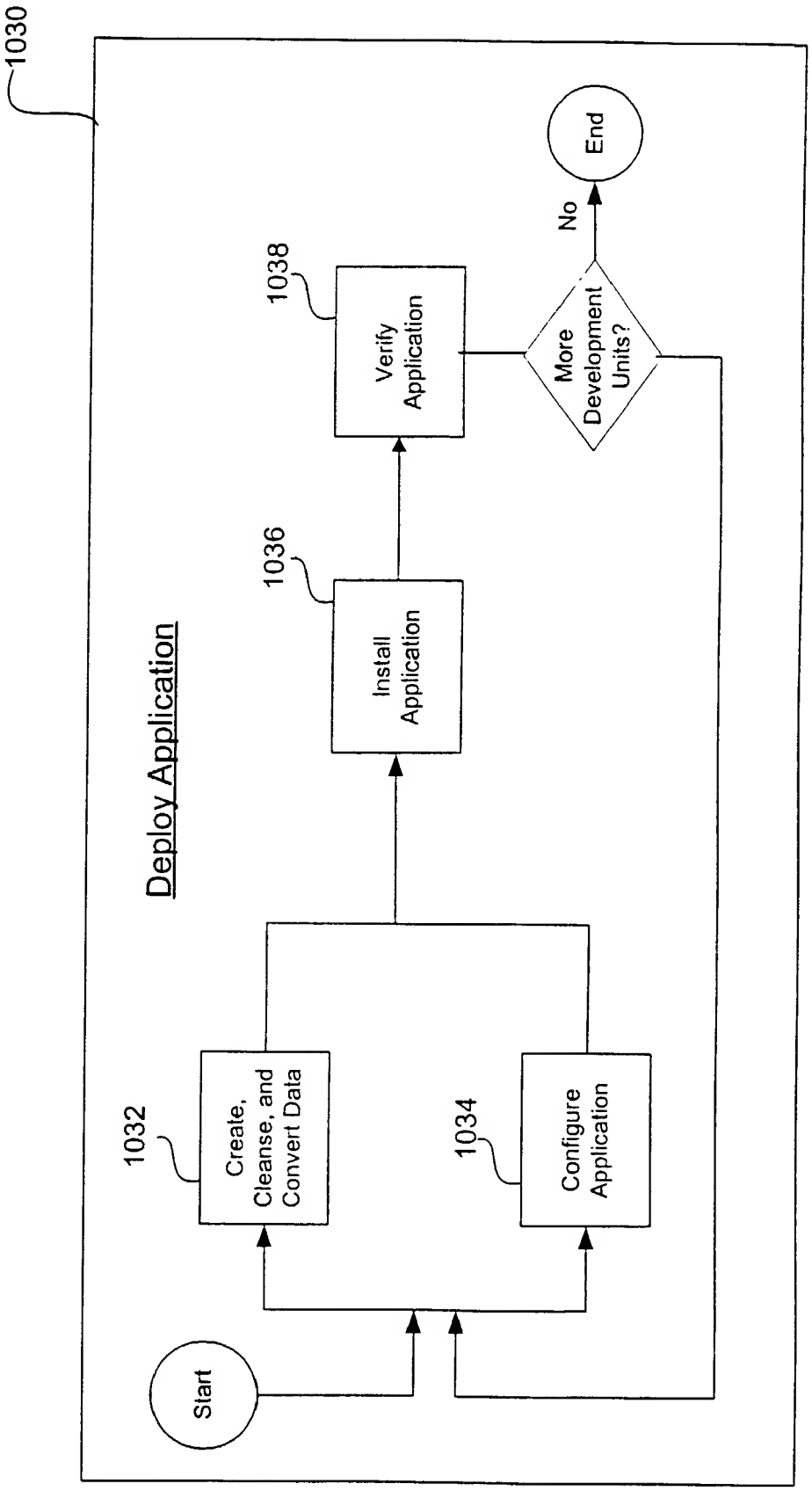

1030
Deploy Application
Start
1032
Create, Cleanse, and Convert Data
1034
Configure Application
1036
Install Application
1038
Verify Application
More Development Units?
No
End

Fig. 10D

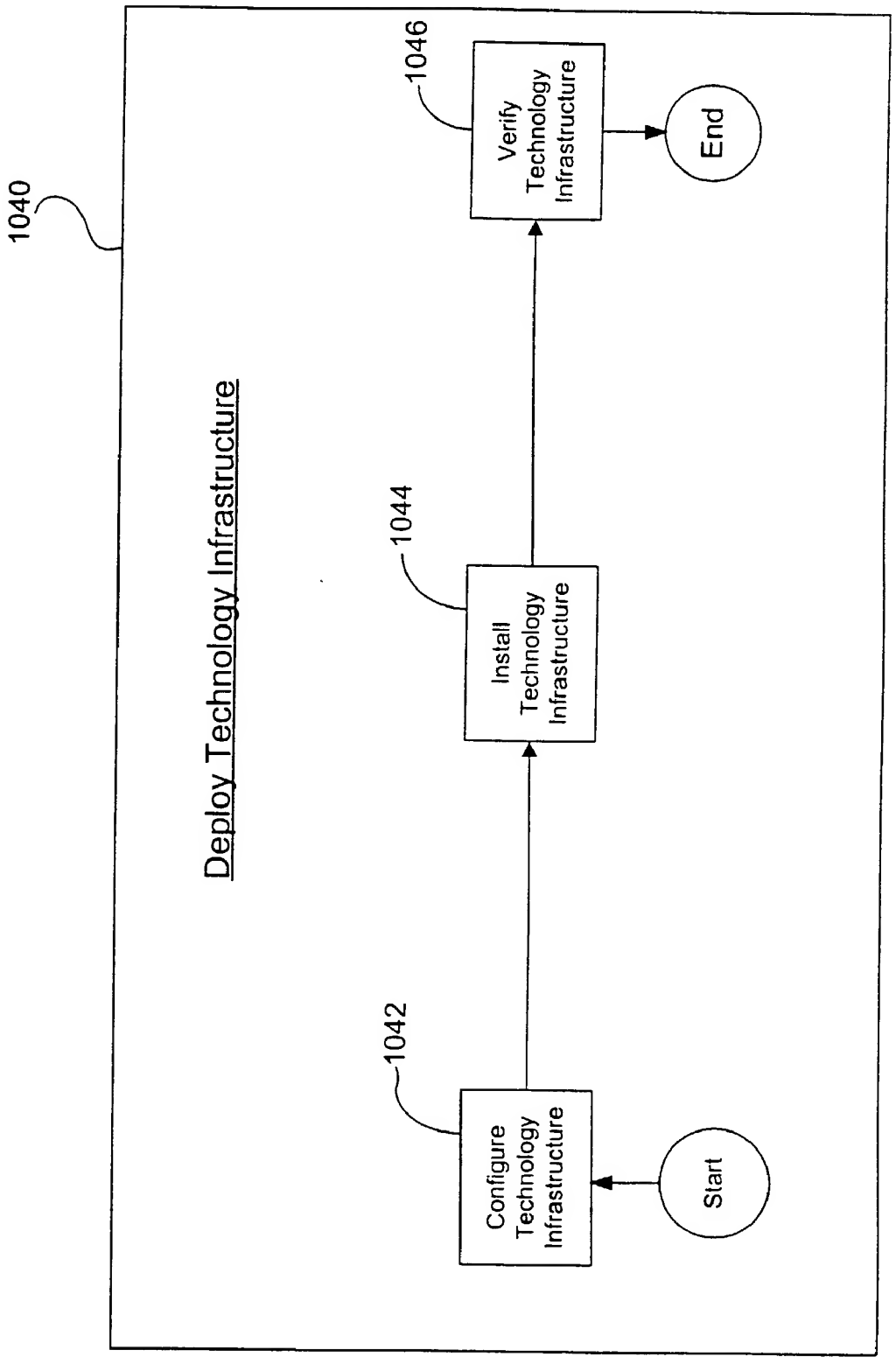

1040
Deploy Technology Infrastructure
1042
Configure Technology Infrastructure
1044
Install Technology Infrastructure
1046
Verify Technology Infrastructure
Start
End

Fig. 10E

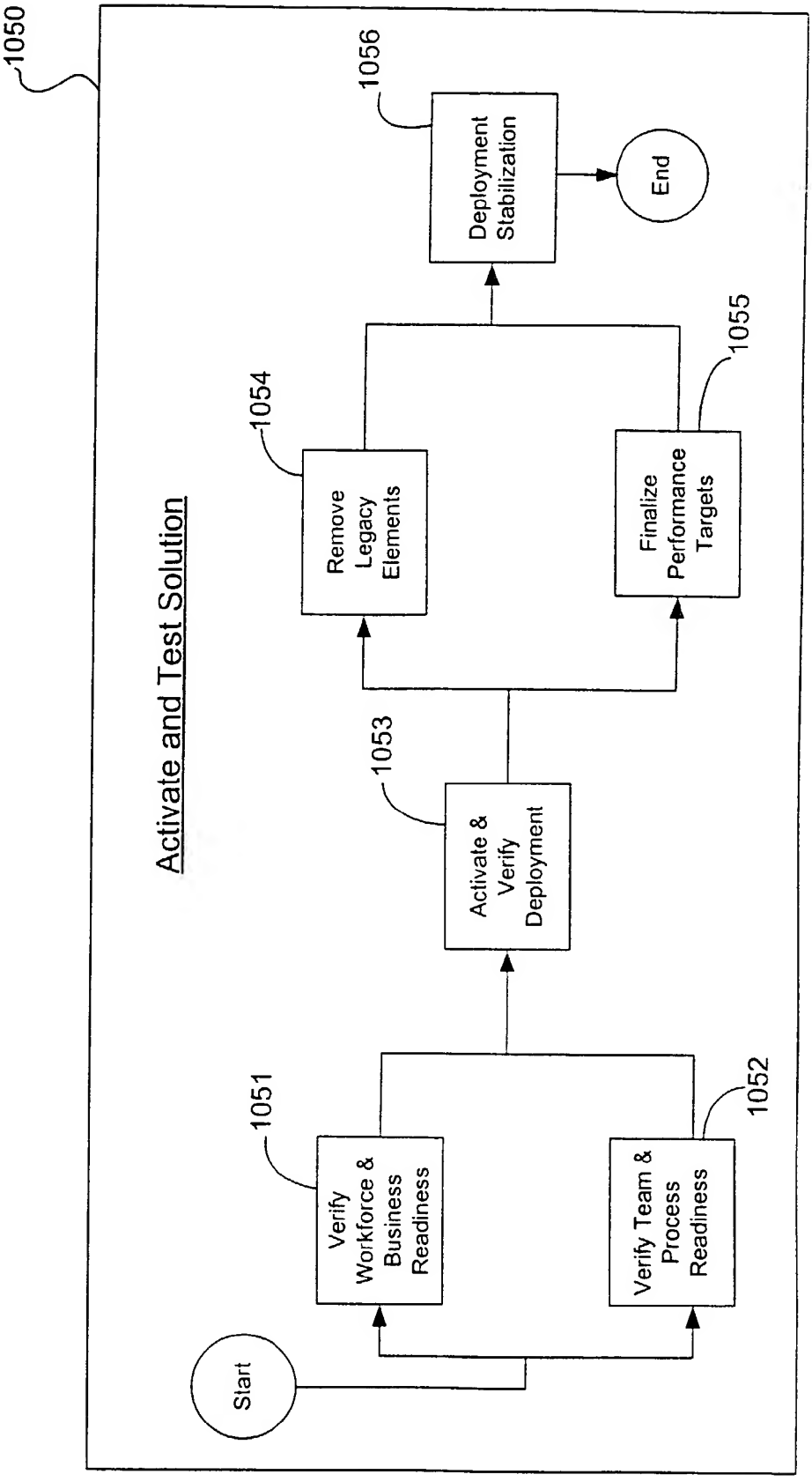

1050
Activate and Test Solution
Start
Verify Workforce & Business Readiness
1051
Verify Team & Process Readiness
1052
Activate & Verify Deployment
1053
Remove Legacy Elements
1054
Finalize Performance Targets
1055
Deployment Stabilization
1056
End

Fig. 10F

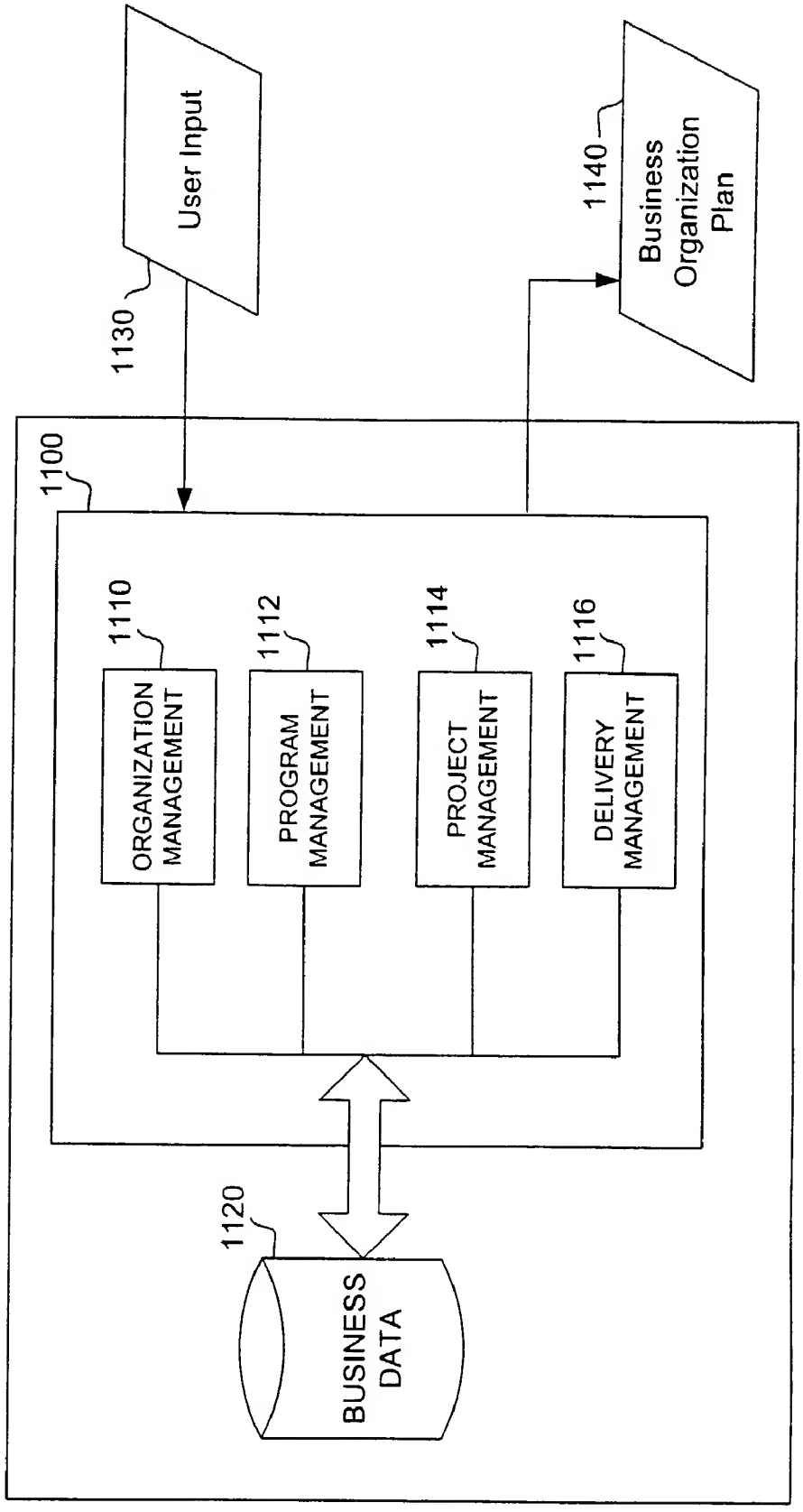

User Input
1130
1140
Business Organization Plan
1100
1110
ORGANIZATION MANAGEMENT
1112
PROGRAM MANAGEMENT
1114
PROJECT MANAGEMENT
1116
DELIVERY MANAGEMENT
1120
BUSINESS DATA

Fig. 11A

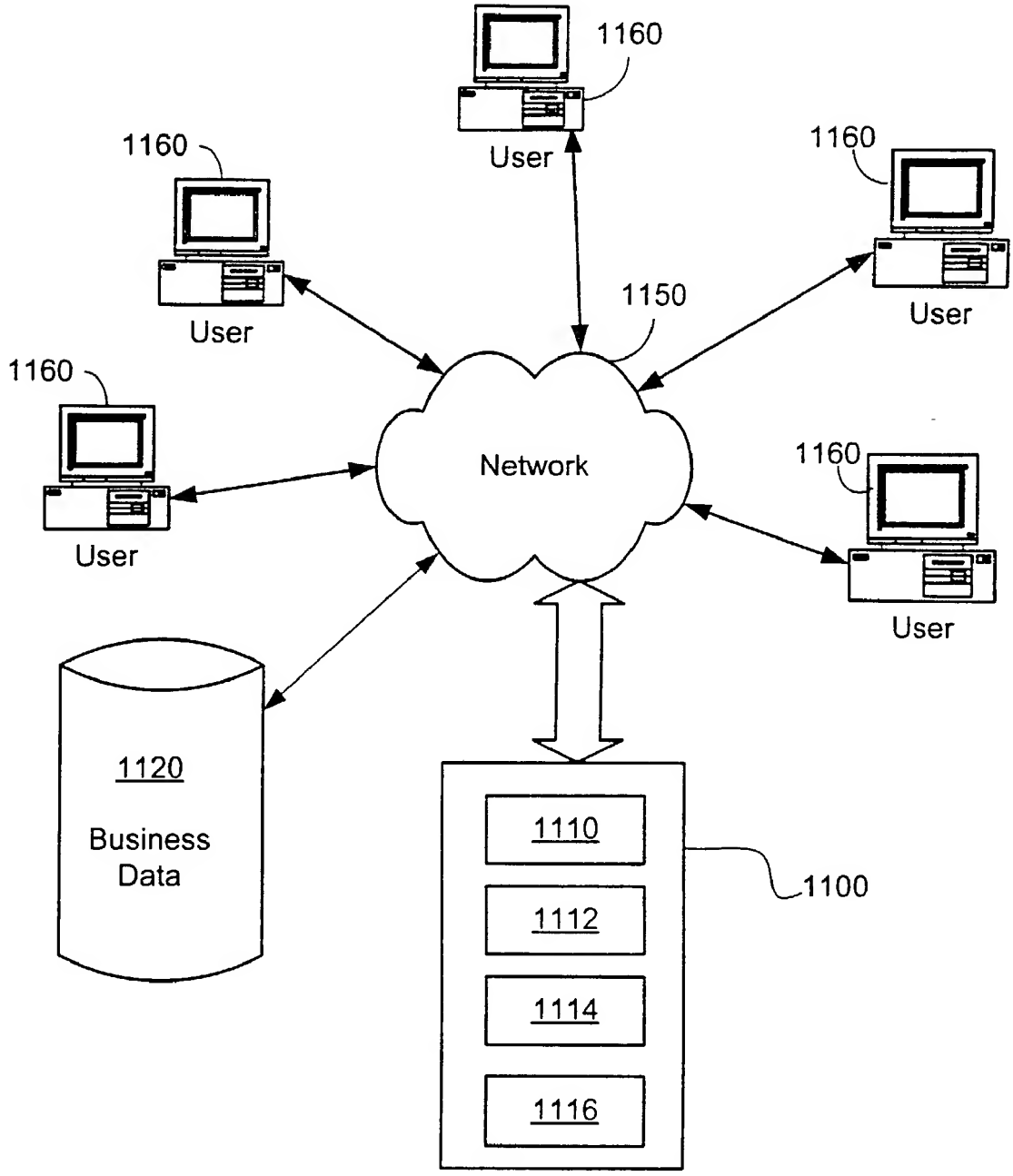

1160
User
1160
User
1160
User
1150
Network
1160
User
1160
User
1120
Business
Data
1110
1112
1114
1116
1100

Fig. 11B

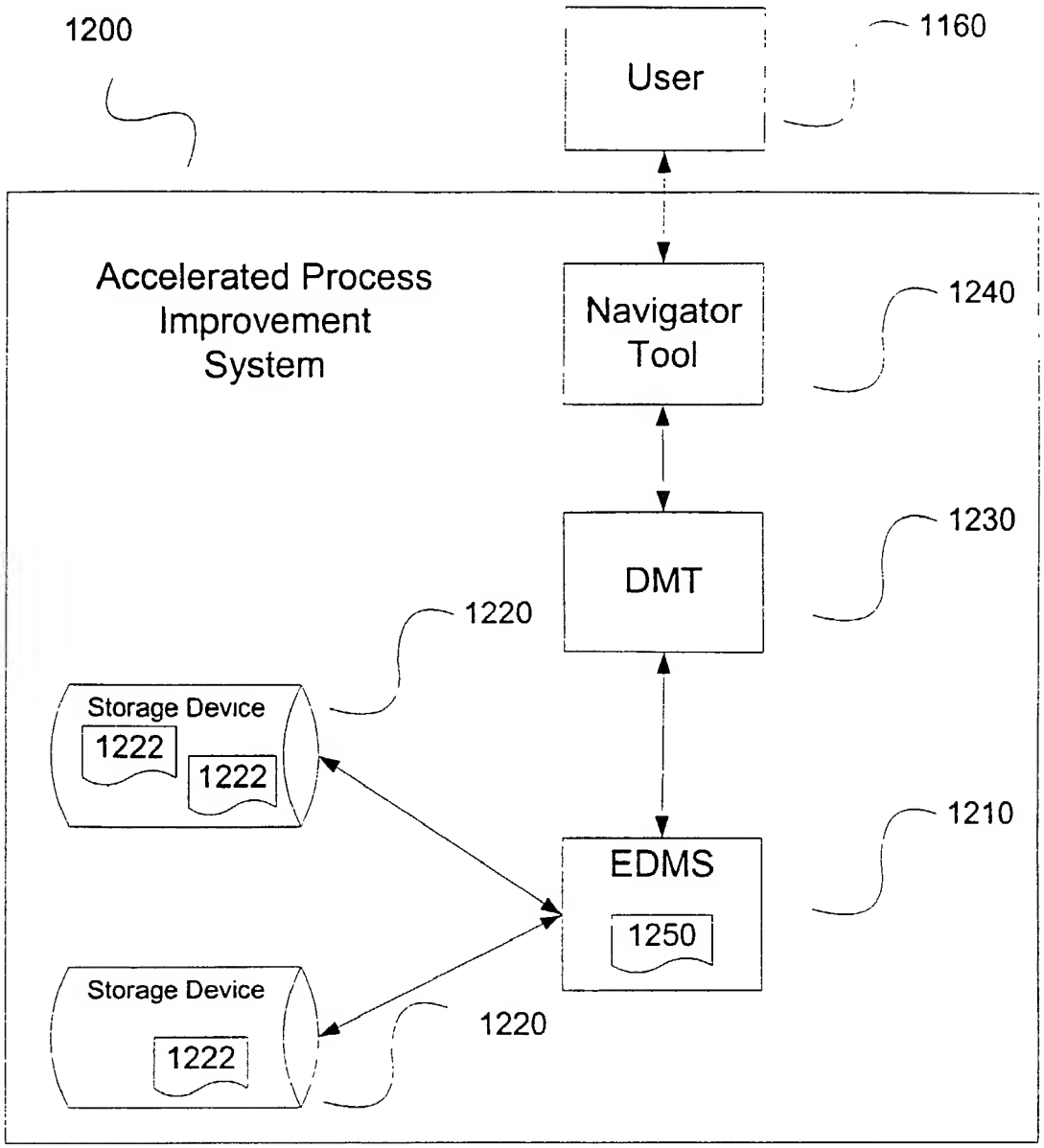

1200
User
1160
Accelerated Process Improvement System
Navigator Tool
1240
DMT
1230
1220
Storage Device
1222
1222
EDMS
1250
1210
Storage Device
1222
1220

FIG. 12

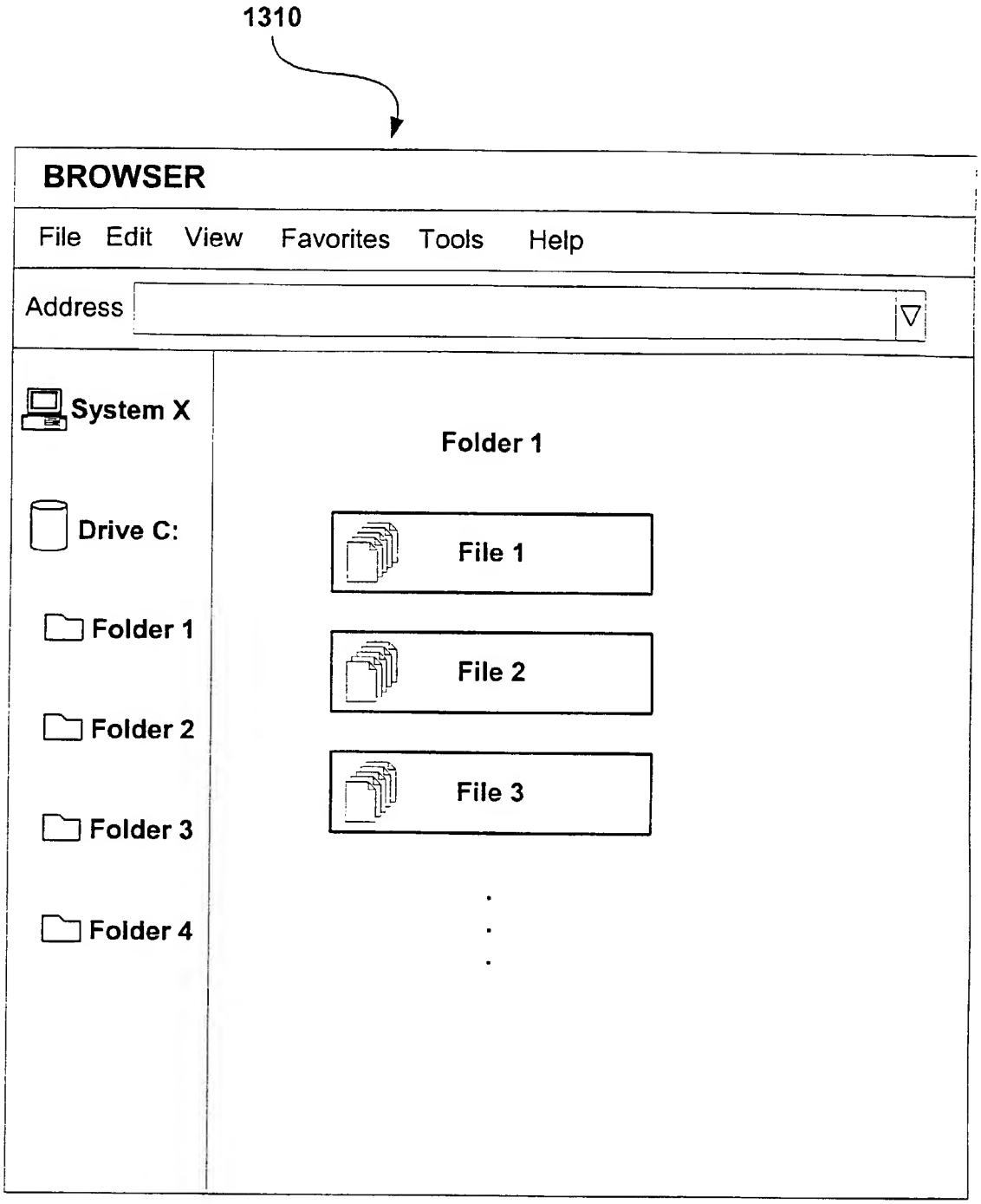

1310
BROWSER
File Edit View Favorites Tools Help
Address
System X
Drive C:
Folder 1
Folder 2
Folder 3
Folder 4
Folder 1
File 1
File 2
File 3

Fig. 13A

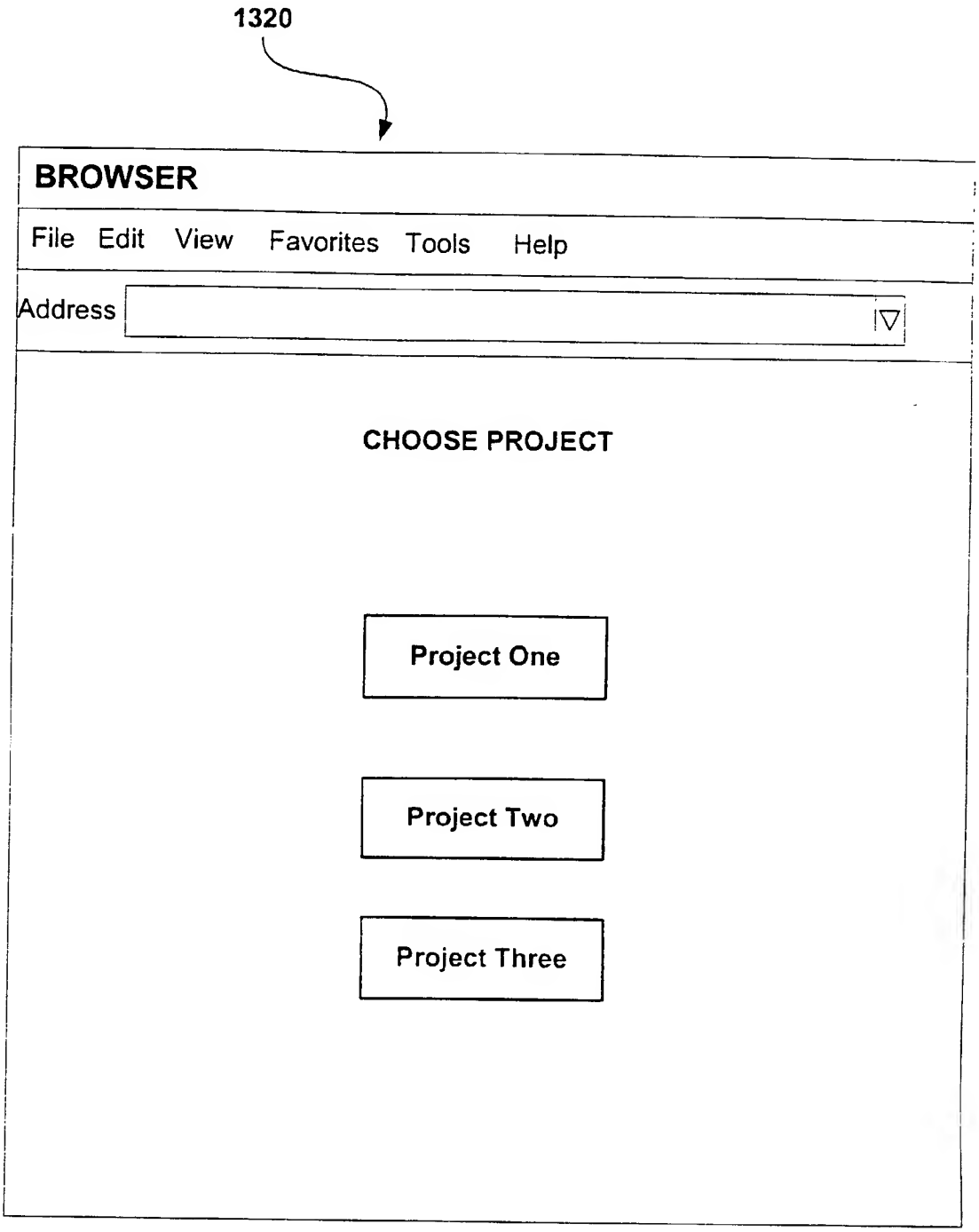

1320
BROWSER
File Edit View Favorites Tools Help
Address
CHOOSE PROJECT
Project One
Project Two
Project Three

Fig. 13B

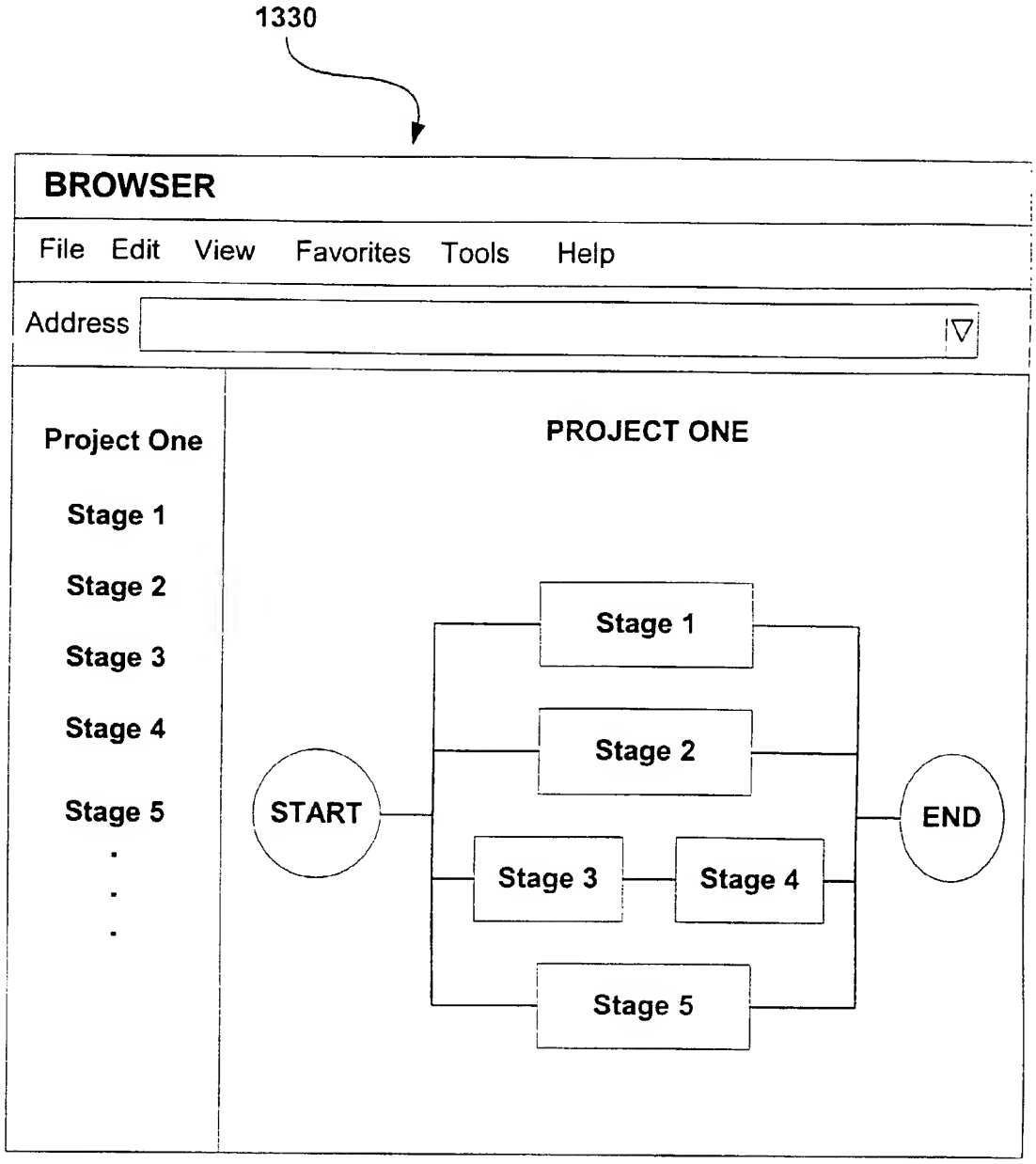

1330
BROWSER
File Edit View Favorites Tools Help
Address
Project One
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
PROJECT ONE
START
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
END

Fig. 13C

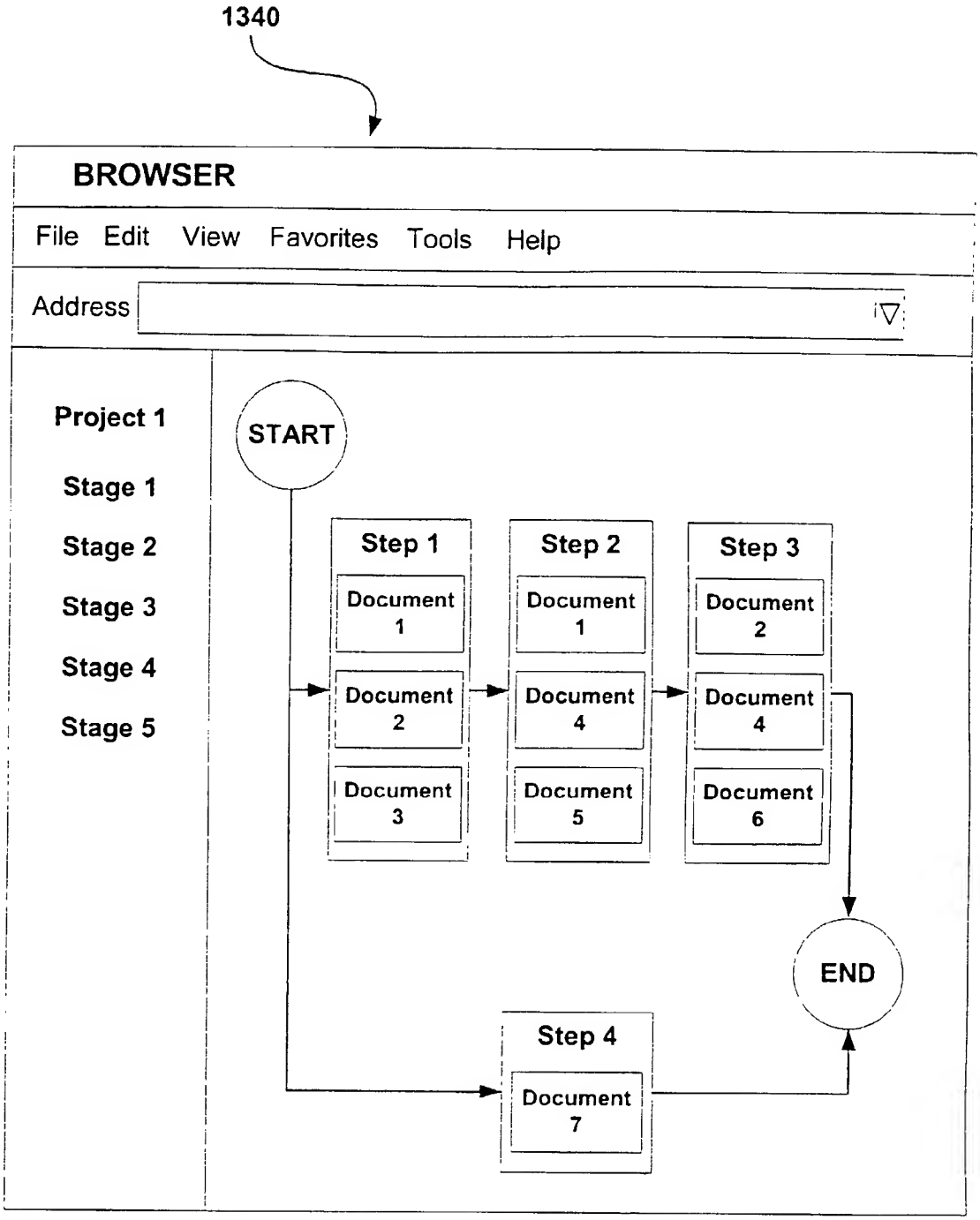

1340
BROWSER
File Edit View Favorites Tools Help
Address
Project 1
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
START
Step 1
Document 1
Document 2
Document 3
Step 2
Document 1
Document 4
Document 5
Step 3
Document 2
Document 4
Document 6
END
Step 4
Document 7

Fig. 13D

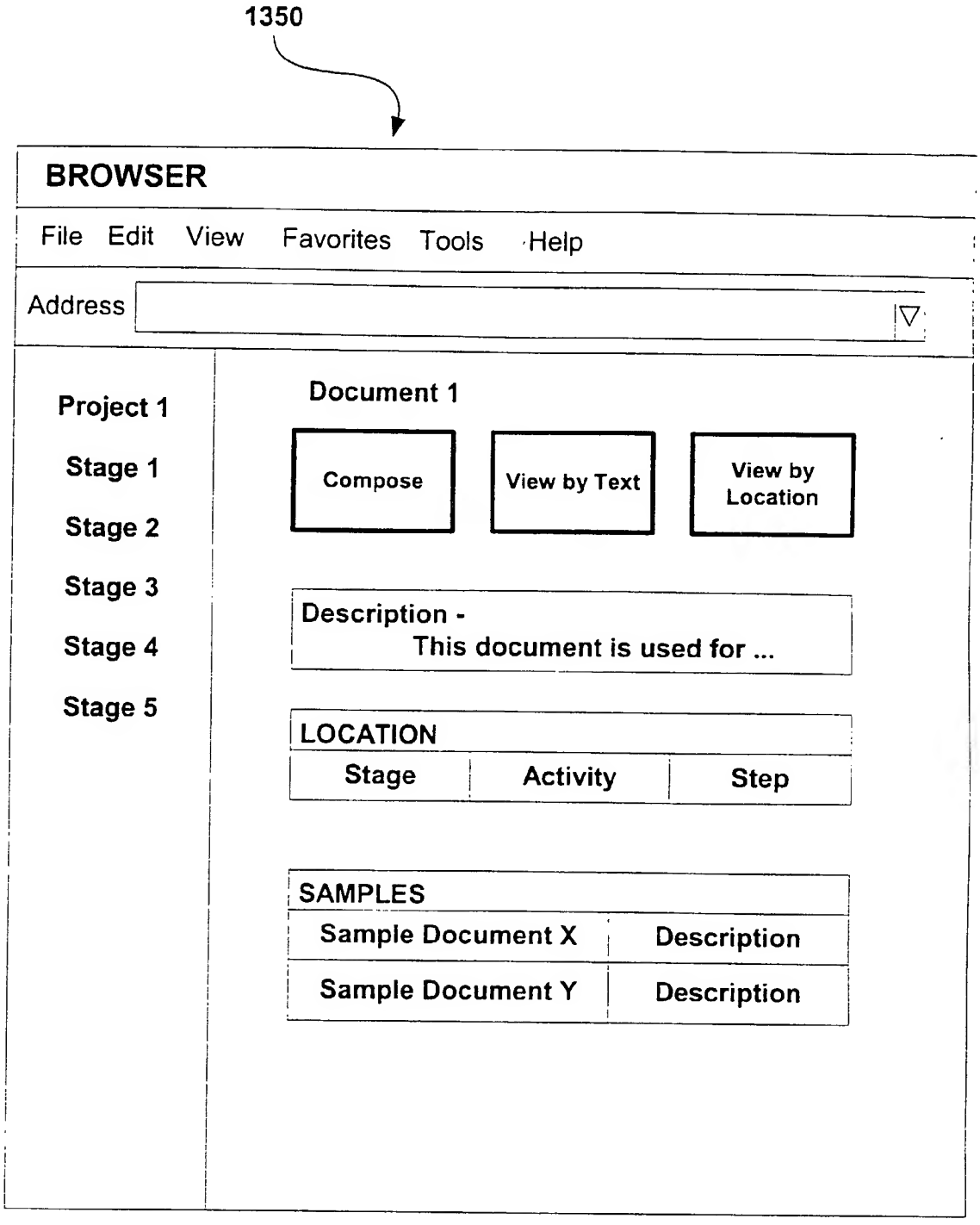

1350
BROWSER
File Edit View Favorites Tools Help
Address
Project 1
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Document 1
Compose
View by Text
View by Location
Description -
This document is used for ...
LOCATION
Stage
Activity
Step
SAMPLES
Sample Document X
Description
Sample Document Y
Description

Fig. 13E

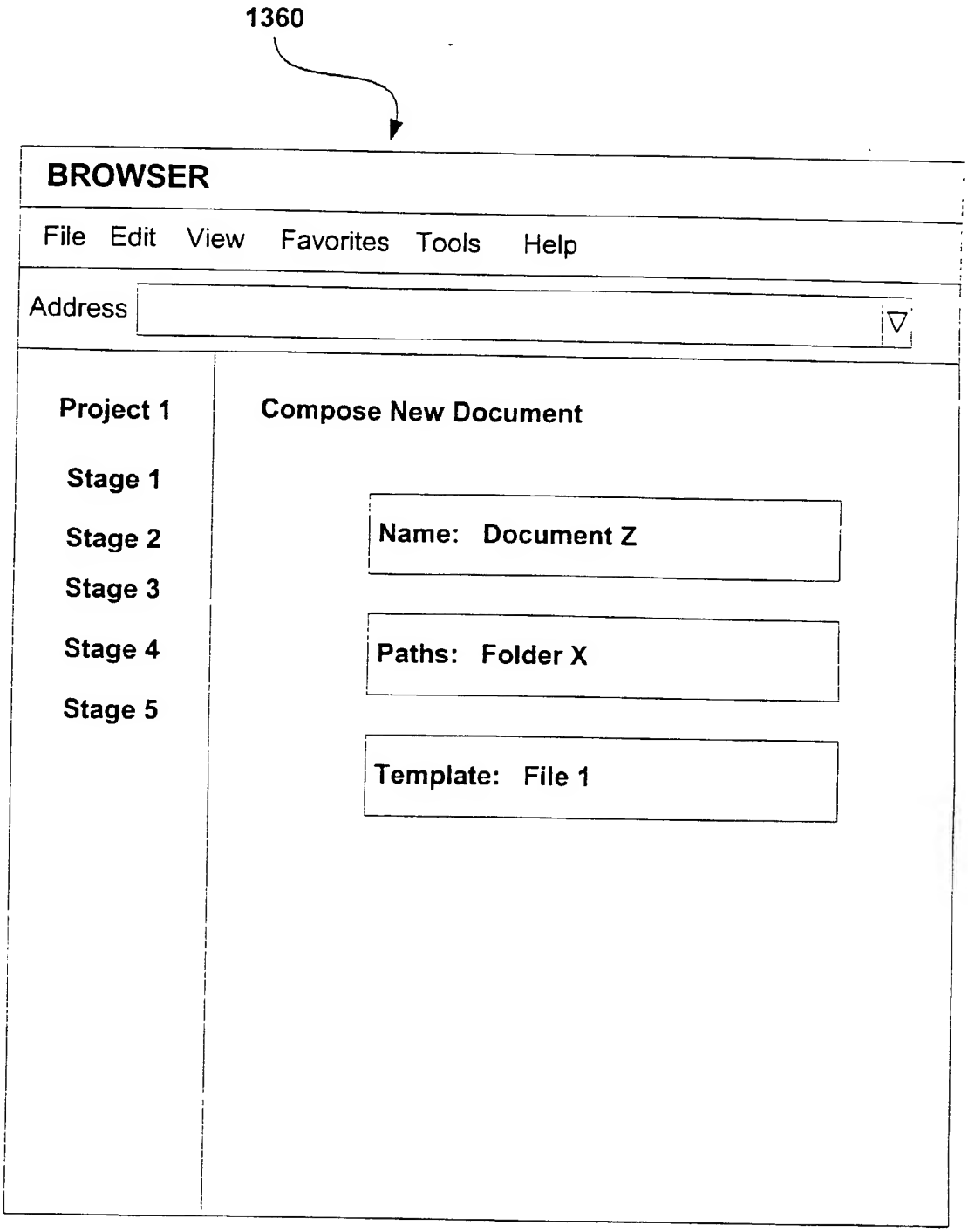

1360
BROWSER
File Edit View Favorites Tools Help
Address
Project 1
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Compose New Document
Name: Document Z
Paths: Folder X
Template: File 1

Fig. 13F

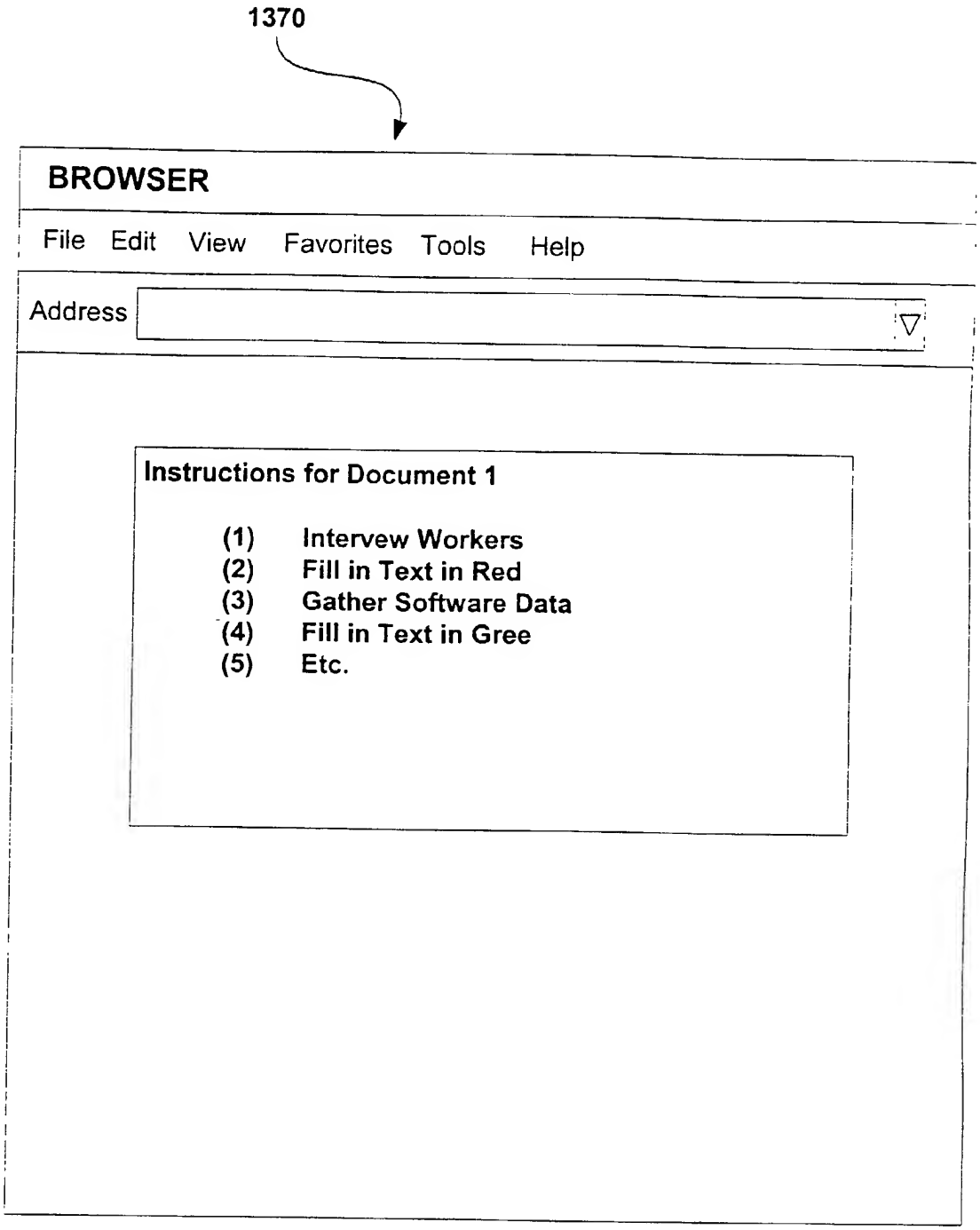

1370
BROWSER
File Edit View Favorites Tools Help
Address
Instructions for Document 1
(1) Intervew Workers
(2) Fill in Text in Red
(3) Gather Software Data
(4) Fill in Text in Gree
(5) Etc.

Fig. 13G

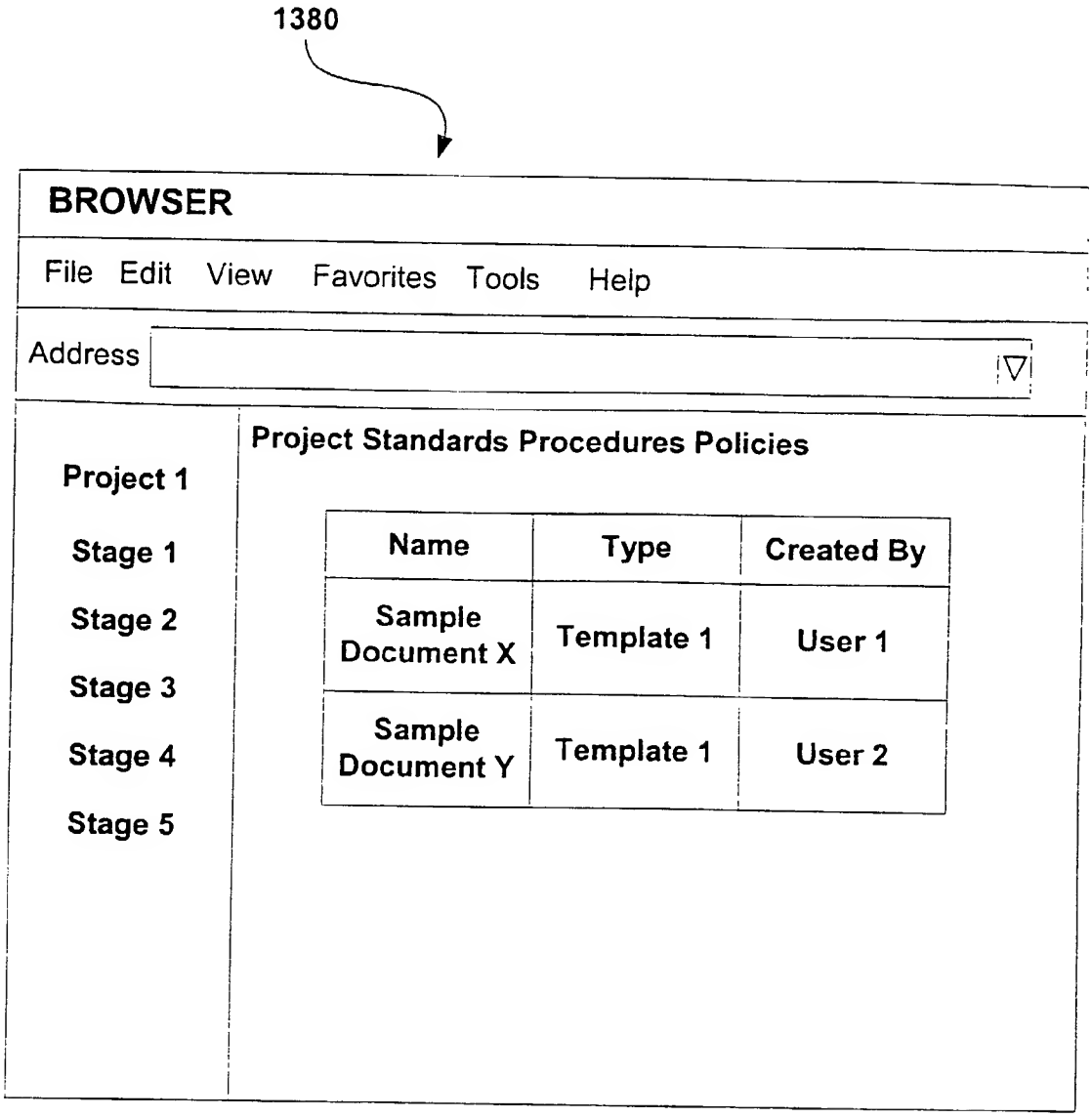

1380
BROWSER
File Edit View Favorites Tools Help
Address
Project 1
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
Project Standards Procedures Policies
Name
Type
Created By
Sample Document X
Template 1
User 1
Sample Document Y
Template 1
User 2

Fig. 13H

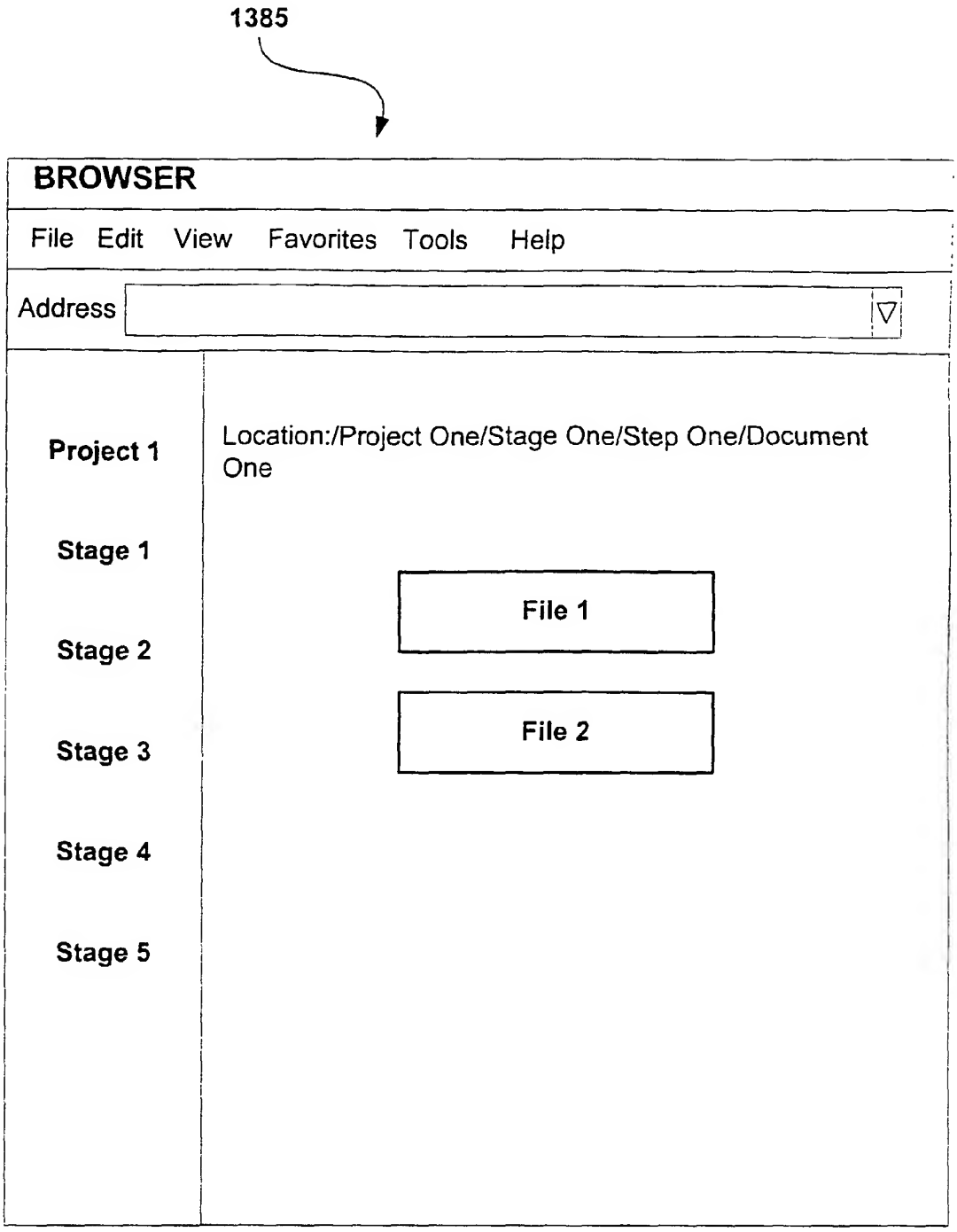

1385
BROWSER
File Edit View Favorites Tools Help
Address
Project 1
Location:/Project One/Stage One/Step One/Document One
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
File 1
File 2

Fig. 13I

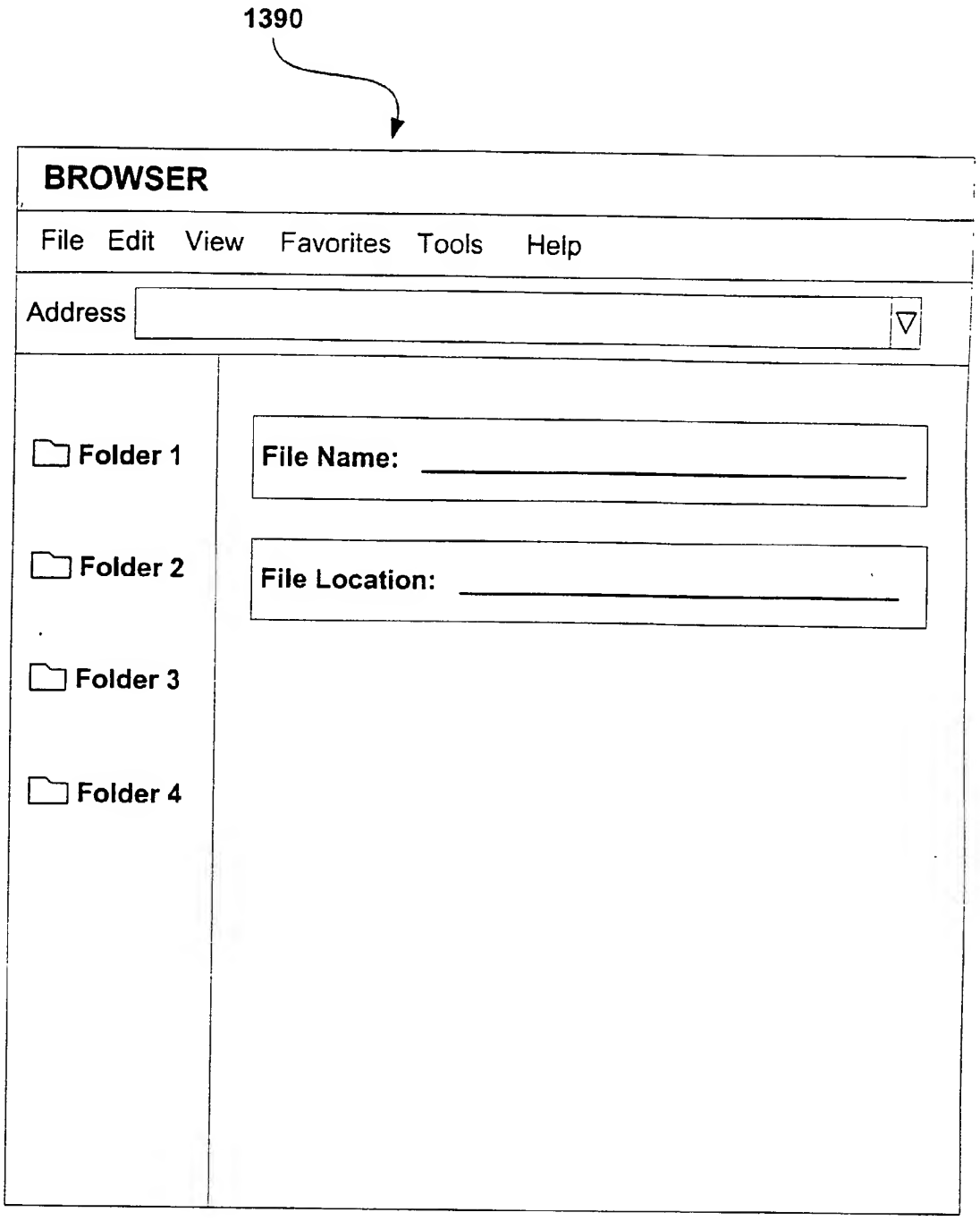

1390
BROWSER
File Edit View Favorites Tools Help
Address
Folder 1
Folder 2
Folder 3
Folder 4
File Name:
File Location:

Fig. 13J

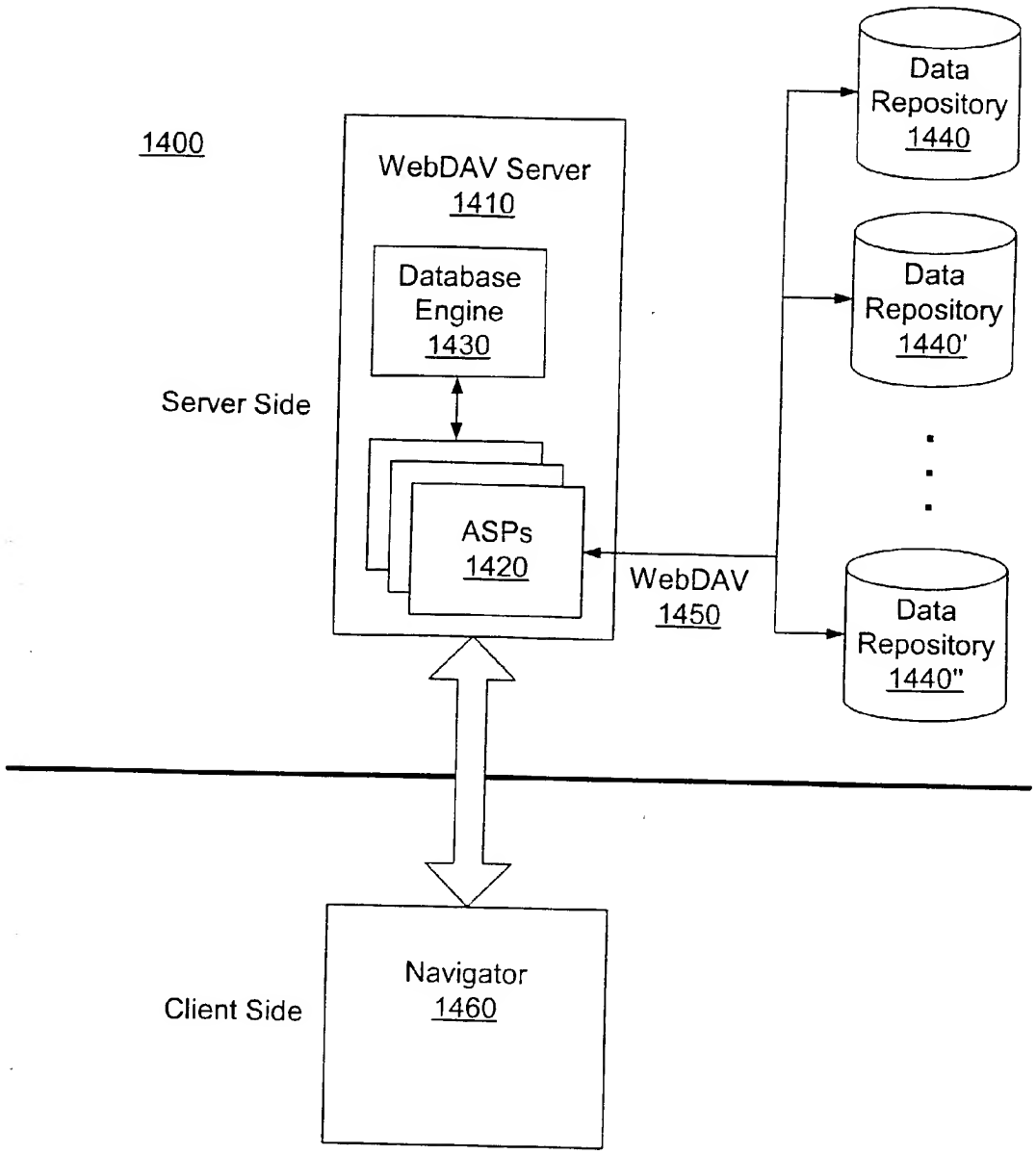

1400
WebDAV Server
1410
Database
Engine
1430
Server Side
ASPs
1420
WebDAV
1450
Data
Repository
1440
Data
Repository
1440'
Data
Repository
1440"
Navigator
1460
Client Side

FIG. 14

ACCELERATED PROCESS IMPROVEMENT FRAMEWORK

RELATED APPLICATIONS

[0001] This application is a continuation-in-part of U.S. application Ser. No. 10/005,759, filed on Dec. 7, 2001, the contents of which are hereby incorporated by reference in their entirety. The application further claims priority from U.S. Provisional Application No. 60/399,459 filed on Jul. 31, 2002, the contents of which are also incorporated by reference in their entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to a method for assisting and expediting an organization's progression through the levels of the Capability Maturity Model (CMM). Specifically, the present invention relates to a method and related system for arranging and administering an organization's infrastructure and a project of interest so that the organization and the product may be more mature, as measured by the CMM.

BACKGROUND OF THE INVENTION

[0003] The Capability Maturity Model® (CMM®) may refer specifically to the Capability Maturity Model for Software (SW-CMM) or, more generally, to a number of other process improvement models developed by the Software Engineering Institute (SEI) and registered to Carnegie Mellon University. The SW-CMM was the first model developed by the SEI, and it originally evolved from the need for the United States Department of Defense to have another measure besides "lowest bidder" in determining who should win project bids. Specifically, the Department of Defense desired a method to better compare and distinguish well designed and shoddy, defective products. The two major usages of the SW-CMM are: (1) as a model for Software Process Improvement (SPI) and (2) as a measure of the capability to produce quality systems. Specifically, the CMM may help a purchaser differentiate properly working product from an incomplete, nonfunctioning, poorly designed product by providing information on a producing organization and its production and development procedures.

[0004] The CMM is an example of a model-based improvement approach that focuses on creation process quality. The rationale for this focus is that, unlike hardware, manufacturing software is essentially error free (i.e., the production of the disks containing the program), but the quality defects (i.e., bugs) are produced during the concept and development process. Therefore, waiting to identify defects after creation of the product is generally difficult and costly. The CMM may be used as a guideline for prioritizing limited resources on the most important, foundational improvements. In the SW-CMM, Key Process Areas (KPAs) define "building blocks" based on industry best practices. The ultimate goal is to establish "continual improvement" of the software engineering process and the resulting products, kaizen (Statistical Process Control), which is common in nonsoftware engineering disciplines. The CMM is described more fully in Mark C. Paulk, *The Capability Maturity Model: Guidelines for Improving the Software Process* (*The SEI Series*) (Addison-Wesley Pub Co.) (1995).

[0005] The Capability Maturity Model Integration^{SM} (CMM^{SM}) was developed to integrate the SW-CMM and various other existing models into a common model. The developers of the CMMI are seeking to establish common terminology between the models, as well as identifying commonality and variability. The SEI is expected to release Version 1.1 of CMMI in the near future.

[0006] The SW-CMM model defines five capability levels and identifies Key Process Areas (KPAs). The CMMI model replaces the KPAs with Process Areas (PAs). The lower levels of the CMMI and the related PAs focus mainly on management processes and industry minimal standards. Higher CMMI levels and the related PAs generally focus more on organizational and technical processes. The higher levels and their PAs also strive for "industry-best" practice.

[0007] While the entire scope of the CMMI is vast and generally outside the range of this document, the various levels of the CMMI are now quickly described. At level 0 or "Incomplete", a project has not yet started. Upon initiation and existence of the project, the project is at level 1. At "Initial" or level 1, the product conditions are ad hoc, chaotic, and high-risk. At "Repeatable" or level 2, the project may repeatedly perform some functions with difficulty. Relevant PAs to level 2 are Requirements Management (RM); Project Planning (PP); Project Monitoring and Control (PMC or PC); Supplier Agreement Management (SAM or SM); Process and Product Quality Assurance (PPQA or QA); Configuration Management (CM); and Measurement and Analysis (MA).

[0008] At "Organizationally Defined" or level 3, the relevant PAs include Requirements Development (RD); Technical Solution (TS); Product Integration (PI); Validation (Va); Verification (Ve); Organization Process Focus (OPF or PF); Organizational Process Definition (OPD or PD); Organizational Training (OT); Integrated Project Management (IPM or IM); Risk Management (RSKM or Rk); Decision Analysis and Resolution (DAR or DA); Organizational Environment for Integration (QI); and Integrated Teaming (IT).

[0009] At "Quantitatively Managed" or level 4, the relevant PAs are Quantitative Process Management (QPM or QM) and Organizational Process Performance (OPP or OP). QPM relates to the informed and correct use of rigorous statistical techniques such as statistical process control (SPC), with the focus on removing specific or attributable causes of variance, and OPP relates to the use of statistical techniques to measure process efficiency. The fifth and highest level, "Optimizing", is basically equivalent to bottom-up process improvement or continuous improvement. In CMMI, the level 5 PAs are Organizational Innovation and Deployment (OID or ID) and Causal Analysis and Resolution (CAR or CA).

[0010] The Capability Maturity Model for Software (SW-CMM) was the first, but not the only, model for improvement of software development. Some other models developed by the SEI include: Integrated Product Development CMM (IPD-CMM), which was renamed and incorporated into CMMI Integrated Product and Process Development (IPPD); People CMM (P-CMM) for Training, Career Development, and Human Resource-related issues; Personal Software Process^{SM} (PSP^{SM}); Software Acquisition CMM® (SA-CMM); and Systems Engineering CMM® (SE-CMM),

which is being incorporated into CMMI for Systems Engineering/Software Engineering. Similarly, FAA-iCMM (a model similar to CMMI and incorporating elements of SW-CMM, SE-CMM, and SA-CMM) was developed by the Federal Aviation Administration.

[0011] Achieving higher levels of CMM maturity is a desirable goal in itself because it generally implies that an organization is producing a superior product and services since the higher levels of the CMM generally require the existence of infrastructure and procedures leading to better tested and developed software and other products. As suggested above, organizations also have secondary financial incentives to achieve higher CMM levels, because customers, such as the United States Department of Defense, are increasingly requiring software suppliers to have a sufficiently high CMM level (e.g., at least level 2) before being awarded a contract.

[0012] A threshold problem for many organizations is that the requirements for the different maturity levels are relatively complex to understand and implement. It is, therefore, a goal of the present invention to provide a method allowing businesses to achieve higher CMM levels without having to understand the complicated requirements of each level.

[0013] Furthermore, the process of achieving higher CMM levels of increased maturity is typically a difficult, expensive, and time-intensive process. While some of the costs are unavoidable, many of the difficulties of achieving higher CMM levels occur because the requirements for the levels do not fit well within the general operations and structure of most organizations. Drastically changing an organization's structure and operations is generally a complex and difficult process. Therefore, another goal of the present invention is to provide a method that simplifies and potentially accelerates the process of modifying an organization's operations and structure to meet the requirements of the higher CMM levels.

[0014] Similarly, many organizations also have difficulty implementing changes to achieve higher CMM or CMMI levels because the organization use of these maturity models as merely checklists of criteria. The maturity models, while serving as a measure to assess organizations, offer little guidance to organizations on implementation of the specified criteria. The random implementation of the items on a maturity model checklist results in increased time and cost for maturation in comparison to carrying out systemic changes that may concurrently satisfy multiple checklist items and assist the organization in achieving several checklist items. Furthermore, a piecemeal implementation of the CMM worsens the above-described problems of complexity and cost. It is, therefore, another goal of the present invention to provide a method by which organizations may implement systemic changes to achieve higher levels of CMM maturity.

SUMMARY OF THE INVENTION

[0015] In response to these and other needs, the present invention provides a method and related system for assisting and expediting an organization's transformation toward higher levels of the Capability Maturity Model (CMM) or other derivative maturity models. In particular, the present invention provides a method for producing a more mature product. A preferred embodiment of the method comprises the managing an organization developing the product, whereby the organizational management comprises managing personnel of the organization and implementing a product improvement process. The method may further comprise managing a project for developing the product and managing the delivery of the product. Furthermore, actions undertaken during the organizational management affects implementation of the project and delivery managements, and the actions undertaken during the project and delivery managements likewise affect implementation of the organizational management.

[0016] In another embodiment, this method may be implemented using a combination of both electronic hardware and software and may be implemented locally or over a network such as an intranet or the Internet. In another embodiment, the method may be implemented using a document management system to administer files related to the steps in the method. These files may assist a user in the creation of required documentation. A document management tool may be integrated with the document management system to associate documentation with steps in the method. A navigator tool may be employed to create a graphical display of the steps in the method using data contained in the files. Another embodiment of the present invention uses Web-DAV-based communications to coordinate access to multiple document repositories.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] A more complete understanding of the present invention and advantages thereof may be acquired by referring to the following description taken in conjunction with the accompanying drawings, in which like reference numbers indicate like features, and wherein:

[0018] **FIG. 1** is a flowchart depicting the steps in a method for producing more mature products in accordance with an embodiment of the present invention;

[0019] **FIGS. 2A-2J** are flowcharts depicting the steps of the process stage of organization management in accordance with embodiments of the method of **FIG. 1**;

[0020] **FIGS. 3A-3D** are flowcharts depicting the steps of the personnel stage of organization management in accordance with embodiments of the method of **FIG. 1**;

[0021] **FIGS. 4A-4F** are flowcharts depicting the steps of program management in accordance with embodiments of the method of **FIG. 1**;

[0022] **FIGS. 5A-5O** are flowcharts depicting the steps of project management in accordance with embodiments of the method of **FIG. 1**;

[0023] **FIGS. 6A-6B** are flowcharts depicting the steps of delivery management in accordance with embodiments of the method of **FIG. 1**;

[0024] **FIGS. 7A-7E** are flowcharts depicting the steps of analysis stage of the delivery management of **FIG. 6A** in accordance with embodiments of the method of **FIG. 1**;

[0025] **FIGS. 8A-8J** are flowcharts depicting the steps of design stage of the delivery management of **FIG. 6A** in accordance with embodiments of the method of **FIG. 1**;

[0026] **FIGS. 9A-9M** are flowcharts depicting the steps of build and test stage of the delivery management of **FIG. 6A** in accordance with embodiments of the method of **FIG. 1**;

[0027] **FIGS. 10A-10F** are flowcharts depicting the steps of deployment stage of the delivery management of **FIG. 6A** in accordance with embodiments of the method of **FIG. 1**;

[0028] FIGS. **11**A-B, **12** and **14** depict systems for implementing the method of **FIGS. 1-10F** in accordance with various embodiments of the present invention; and

[0029] FIGS. **13**A-J illustrate display images from the system of **FIG. 12** in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0030] As generally illustrated in **FIG. 1**, the present invention provides a CMM in a BOX method **10** for easing and speeding an organization's transformation toward higher levels of the above-described CMM hierarchy. The CMM in a BOX method **10** generally comprises the steps of getting started **20**, organization management **100**, program management **400**, project management **500**, and delivery management **600**. As suggested in **FIG. 1**, the CMM in a BOX method **10** performs as a cycle in which actions performed during the organization management **100** help control the current steps of program management **400**, project management **500**, and delivery management **600**. Subsequently, the actions performed during program management **400**, project management **500**, and delivery management **600** adjust the step of organization management **100**. Each of these steps of CMM in a Box method **10** is described in greater detail below.

[0031] In these discussions, it should be appreciated that the various steps of the CMM in a Box method **10** preferably include the creation or updating of various documentation (or monuments) that detail and verify the execution of tasks performed by the organization. These documents may be used to demonstrate compliance with the higher levels of the CMM or CMMI. Some of these documents are listed directly with the associated steps, but a complete listing is beyond the scope of the present application. A short listing and summary of some of the various documents that may be created or updated during the steps of the CMM in a Box method **10** is listed below in Table 1.

[0032] The CMM in a BOX method **10** begins with getting started step **20**. In step **20**, the organization prepares to initiate the other steps in the CMM in a BOX method **10**. In particular, the organization may review the requirements of the various management steps **100**, **300**, **400**, and **600**. Similarly, the organization may review the CMM or CMMI and their general requirements in order to better understand the goals to be accomplished during the various steps of the CMM in a Box method **10**.

Organization Management

[0033] As illustrated in **FIG. 1**, Organizational Management **100** is divided into two stages, process step **200** and personnel step **300**. The Organization management step **100** generally concerns activities related to the structure and activities of an organization. The process stage **200** contains the methodologies, process flows, tools, and templates to create and maintain a Software Engineering Process Group (SEPG). It should be noted that in the CMMI, the SEPG is replaced by a Process Group to allow for the inclusion of systems engineering. Thus, this application uses the SEPG to refer to a group overseeing software and non-software processes. As suggested by its title, the personnel stage **300** contains the methodologies, process flows, tools and templates to perform organizational design and development, measurement performance, and conduct organizational training.

[0034] As depicted in **FIG. 2A**, the process stage **200** consists of the steps of planning and organizing a SEPG, step **201**; and of managing and improving the organization's processes, step **202**. Step **201** is further subdivided into planning SEPG project execution (step **210**) and organizing SEPG project resources (step **220**). Likewise, managing and improving the organization's processes in step **202** may be subdivided into controlling SEPG project work (step **230**); rolling out and supporting SEPG projects (step **240**), completing the SEPG project **290**, and controlling process improvement (step **203**). In turn, the step of controlling process improvement, step **203**, consists of conducting a super SQA review, step **250**; conducting assessments, step **260**; conducting quarterly surveys, step **270**; and conducting process improvements, step **280**.

[0035] In the planning and organizing of the SEPG in step **201**, the organization first performs the planning of the SEPG project execution, step **210**. While planning SEPG project execution in step **210**, the SEPG defines its process improvement plan and subordinate plans for the fiscal year. Since the SEPG is a continuously operating project, plans are reviewed and updated annually, at a minimum, usually with the beginning of a new fiscal year. Step **210** begins at the initiation of the project to define the pieces of an initial project plan and all subordinate plans that should be used to manage the execution of the project. Using this information, the organization seeks to develop a SEPG project plan, a SEPG work plan, a communication and sponsorship plan, a configuration management plan, a risk management plan, and a training needs matrix, as these objects are defined in the CMM. The organization further performs decision analysis and resolution during the planning of the SEPG project execution, step **210**.

[0036] One possible process for planning the SEPG project execution, step **210**, is generally depicted in **FIG. 2B**. In an initial aspect of the planning a SEPG project execution, step **210**, the organization tailors the CMM in a BOX method **10** as needed. Specifically in step **212**, the organization determines whether to waive or skip steps in the CMM in a BOX method **10** as required by organization or the particular project. For instance, the organization skip tasks that are inapplicable to a project and therefore unneeded to either achieving higher levels of maturity in the CMM or to develop more mature products.

[0037] Another step in the SEPG project execution, step **210**, is to develop a project plan, step **214**. The project plan describes the project approach for the project timetable, metrics, organization, supplier agreement management, communication and sponsorship strategy, training, quality initiatives, software system development process, configuration management, logistics, facilities, tools, and purchasing. It further describes the project approach for training, metrics tracking, and roles and responsibilities on the project. The organization may also use Decision Analysis and Resolution (DAR) to develop the Project Plan, as defined in the CMMI.

[0038] The organization may further develop subordinate plans, step **216**. The development of the appropriate subordinate plans, step **216**, satisfies the needs of the project, such as the creation of subordinate plans for subcontractor management, risk management, communication and sponsorship, and configuration management, all of which are described in greater detail below. In the development of subordinate plans, step **216**, the organization may further create a work plan. For instance, the organization may create a "bottom-up" or task-level project work plan based upon estimates where critical paths and dependencies are defined and managed within a project work-planning tool, such as Microsoft Project and Project Workbench®.

[0039] Another aspect of the SEPG project execution process, step **210**, is to develop project estimates, step **218**. The organization may develop project estimates, step **218**, using an estimating tool as a starting point for the estimates. For instance, estimates may be developed using the following steps: (1) tailor tasks and estimating model; (2) determine estimating factor values; (3) define work packages; (4) determine a timeline for the estimate; (5) reconcile a present estimate to an initial estimate; and (6) document assumptions used to form the estimates. The organization preferably further validates any estimates by verifying estimates against estimates or actual results from comparable projects. To form accurate estimates of available resources, the organization should further consider other resource-tapping activities such as community involvement, recruiting, mentoring, and training, when evaluating resources.

[0040] Returning to **FIG. 2A**, the organization then continues the process stage **200** and the planning and organizing the SEPG, step **201**, by organizing the SEPG project resources, step **220**. During step **220**, the SEPG focuses on obtaining, assigning and training its human resources, and establishing the project's other physical resources including installation of tracking tools and document repositories. This task is performed iteratively as needed to organize, mobilize and manage SEPG resources throughout the execution of the project. The organization performs step **220** as needed to organize the project's human resources, to establish other resources, to make work assignments and to any training needed to enable resources. Turning to **FIG. 2C**, the first step in organizing the SEPG project resources in step **220** is to refine resource needs, step **221**. In this step **221**, the organization defines the team organization structure, schedules the work, and defines the human and physical resource needs of the project. These tasks are performed in view of each project's requirements. By refining resource needs in step **221**, the organization helps to ensure that project staffing and facilities needs are met on a timely basis without affecting the completion date and the quality of the work. The organization may complete this refining of resource needs in step **221** by: (1) determining project organization structure; (2) balancing a development schedule using human resource guidelines; and (3) refining physical resource needs that were outlined in the logistics, facilities, and tools section of the project plan formed in step **214**.

[0041] Returning to **FIG. 2C**, the organization continues the organization of the SEPG process resources in step **220** by establishing project standards and goals, step **222**. The establishment of project standards and goals in step **222** is accomplished by developing, modifying, and adopting administrative and project-specific project standards and procedures. Examples of administrative procedures are employee availability checklists, time accounting procedures, status reporting, vacation scheduling, etc. Project standards and procedures include design and development standards, and the use of project specific tools.

[0042] The organization continues the organizing the SEPG process resources in step **220** through organizing a project team in step **223**, also illustrated in **FIG. 2C**. The selection of project team members is based on project requirements. Other elements in the organization of a project team are the finalization of the project team's organization structure and documentation in an organization chart in the project plan. The organization should further update the training needs matrix to document: (1) the training required of each project team member and (2) the proposed means for fulfilling the training. The training needs matrix is further used to track project team member training. In another implementation, organizing a project team in step **223** may further require the organization to determine, as a team, the project's mission, vision, and charter, and then to document these determinations in the project plan and orientation binder that are created as required to achieve higher maturity levels in the CMM.

[0043] Returning to **FIG. 2C**, another task in the organization of SEPG project resources is to establish other resources indirectly needed for the SEPG project, step **224**. Specifically, the organization performs this task by organizing the physical resources, such as hardware or software, provided by program management and developing the orientation and/or training needed to support the activities of the project team. The establishment of other resources in step **224** helps create a work environment that promotes communication, collaboration, and group cohesion.

[0044] Also, as illustrated in **FIG. 2C**, the organization of SEPG project resources in process **220** further includes enabling resources, step **225**. An organization performs this step **225** to orient and train team members, to coach and evaluate team members, and to manage the physical resources assigned to the project. The enabling of resources in step **225** aids the project manager in motivating and challenging team members, while helping to ensure that various project personnel believe their work to be important. Specifically, the organization should communicate the project's mission, vision, and charter to new team members. Large projects may also elect to formalize these items at the program level, and projects may conduct one or more meetings that include all team workers.

[0045] Referring to **FIG. 2A**, another element in the process stage **200** is to manage and improve the organization's processes, step **202**. The first step in the management and improvement of process is the control of SEPG project work in step **230**. During the control of SEPG project work in the step **230**, SEPG project management monitors the execution of the project against project plan and makes adjustments as necessary. Project Status Reports are prepared for the Project Sponsor. Potential and actual problems are identified through the measuring and monitoring of progress and performance against the SEPG Project Plan. Depending on the type of problem identified, an Issue, Risk, System Investigation Request (SIR) or Change Request (CR) is logged. The SIRs and the CRs are described in greater detail below. SEPG Project management is expected

to take appropriate corrective actions to resolve problems that are discovered. The controlling of SEPG project work in the step **230** is also illustrated in **FIG. 2D** and is now described in greater detail. The controlling of SEPG project work in the step **230** includes releasing work packages, step **231**. Work packages are generally described in the CMM criteria and generally relate to the tasks and functions given to the various workers in a project. To release work packages, the organization should (1) assemble and release work packages according to the work plan and (2) communicate the requirements of the work packages to the assigned team members. The project team then performs the work needed to develop the required deliverable good. During step **231**, the organization preferably acts to ensure that each team member understands assigned responsibilities, including target dates and budgets. Furthermore, the organization should implement the project so that each team member (1) is able to provide input regarding various responsibilities and (2) accepts these responsibilities.

[**0046**] As depicted in **FIG. 2D**, a following task in the control of SEPG project work, step **230**, is measuring performance, step **232**. The task of measuring performance in step **232** generally includes capturing actual results and calculation of metrics in order to manage performance. The capture metrics are outlined in the SEPG project plan formed in step **214** and include cost, effort, scope, quality, and schedule. The organization should further track project infrastructure and technical requirements, such as hardware, software, and performance requirements that were outlined during planning in step **210**. The organization should also analyze any deviations from the project plan and identify, in a timely manner, the causes for the deviations.

[**0047**] Concurrent with measuring of performance in the step **232** is managing performance, step **233**, as illustrated in **FIG. 2D**. Managing performance in step **233** generally requires the organization to manage project performance against the previously defined project and work plans. To manage project performance in view of the project and work plans, the organization proactively assesses performance, status, quality and risk. When the actual results from the development of the project do not match the plans, the organization should further determine alternative goals or actions. The implementing organization may further obtain approval for corrective actions, and then take corrective actions. The corrective actions may include, but are not limited to, work process changes, team building, training, increased or decreased supervision, work assignment changes, reassignment of team members, initiation of risk responses, the change of requests to be pursued with program management as part of the configuration management process, project replanning changes that specify needed modifications to the project plan, project plan revisions (work package changes, etc.) or escalation to program management. The organization should also reevaluate project decisions throughout the project life cycle, when various project triggers or other issues, risks, etc. arise. The organization may also manage team member performance according to organizational and industry standards and tools.

[**0048**] Continuing with **FIG. 2D**, following the measuring of performance in step **232** and the managing of performance in step **233**, the organization communicates project status, step **234**. During step **234**, the organization generally develops and communicates project status to all project stakeholders according to the project plan. The project stakeholders include project and senior management and other affected groups. The organization may further conduct status and review meetings involving affected groups as appropriate. During the communication of project status in step **234**, the organization should document meeting minutes as required for the CMM.

[**0049**] Continuing with **FIG. 2D**, following the communication of project status in step **234**, the organization obtains acceptance of interim deliverable goods, step **235**. Obtaining acceptance of interim deliverable goods in step **235** generally requires that the organization obtain acceptance of interim deliverables by all designated stakeholders, as appropriate, at key interim points throughout the project life cycle. Any acceptance of final deliverables takes place in connection with completing the program.

[**0050**] Concurrent with the above-described steps **231**-**235**, another task in the control of SEPG project work in step **230** is to execute project management processes, step **236**. The organization should execute step **236** in conjunction with other project control activities, such as measurement activities and status reporting. Also, the project management processes may occur continuously, periodically, or may be event driven. One project management process in step **236** is risk management, which addresses the identification, analysis, and avoidance/mitigation aspects of risk management on a project. During risk management, the organization may perform risk identification, during which the organization identifies, names, and describes the various risks. The organization should further generate a list of specific incremental risks in the project's risk tracking tool. For instance, the organization may document known triggers for a risk, the potential damage for each risk item, and references for the sources of risk. Another risk management task in step **236** is risk analysis, in which the organization analyzes the identified risks. In the risk analysis, the organization should classify the risks and include any additional information necessary to support the analysis. The organization may then select a rank/prioritized list of top risks. For instance, the organization may create a list of the top five risks to a project. Another risk management task is risk avoidance and mitigation. Risk avoidance activities address the sources of a risk, thereby reducing the probability that it would become a problem. For a top ranked or prioritized risk, the organization should identify how the risk can be avoided. Risk mitigation measures attack the consequences of a risk, reducing the risk's potential impact on the project. For the top ranked/prioritized risks, the organization may identify actions to reduce the impact of the risk if it occurs. The organization may also use Decision Analysis and Resolution (DAR) to assess the risks, where DAR is defined above. Many automated risk management applications are commonly available, and an organization may choose from these various risk management applications as needed to best fulfill the needs of the organization.

[**0051**] Another task in the execution of project management in step **236** is scope management, which addresses the acceptance of requirements to define scope and the requirements to change control process. For instance, one scope management task is requirements development. During the task of requirements development, the organization identifies and documents requirements needed to promote and ensure bidirectional traceability, so that the organization

may trace requirements between the development and the testing of the requirements. As with all work products, requirements are preferably placed under configuration management (CM), as defined in the CMMI. Another scope management task is requirements acceptance, during which the organization documents and reviews requirements with all affected groups and obtains acceptance from the affected stakeholders. The organization should further establish baseline standards for satisfying the requirements. Another scope management task for the organization is making any required changes to the requirements and their baselines. The organization generally follows the project's change control process for any changes to baselined requirements. Namely, the organization submits a change request; reviews a change request; performs impact analysis, including cost, schedule and efforts impacts; determines disposition; implements change, including associated impact to other work products and activities; and notifies requester and affected groups. Again, the organization may determine if it is necessary to use DAR to assess changes in scope.

[0052] Another project management process in step **236** in the execution of the project management processes is configuration management. This task addresses the set of activities performed to establish and maintain the integrity of the project work products throughout the project's life cycle. One set of configuration management tasks relates to configuration identification activities. During the configuration identification activities, the organization identifies, names, and describes each of the configuration items that should be placed under configuration management. In particular, all work products should be placed under some type of configuration management. During the configuration identification activities, the organization generally uses the CM plan to define a baseline for the configuration items and to indicate the level of configuration management for each item.

[0053] Another configuration management process in step **236** is the configuration of control activities. Generally, the organization requests, evaluates, approves or disapproves, and implements changes to the baselined configuration items defined during the configuration identification activities. All of the configuration items should be archived and placed under the project's documented change control process.

[0054] Configuration of status accounting activities is another configuration management process in step **236**. During this process, the organization records and reports the status of the project's configuration items. Similarly, the organization should further perform configuration audits. Specifically, the organization may, using the CM plan, determine the extent to which actual configuration items reflect the planned configuration items. The purpose of this task is to ensure that the entire configuration is correct and complete. The organization should further document results as required in the CMMI.

[0055] Another project management process of the execution of the project management process in step **236** is issue management and escalation. This task involves the identification and documentation of issues using an issue tracking tool, as well as a review of the issue and an analysis of any impact on deliverables, scope, contingency, resources, costs, schedule, and/or quality. Specifically, the organization should identify a resolution approval party, an issue's owner, and determine expected time frames. The organization may also determine if it is necessary to use DAR to assess the issue, as described above. The organization may further research and identify issue solution alternatives. Subsequently, the organization may refer the issue to program/senior management when: (1) the project cannot resolve the issue internally, (2) when the issue impedes the progress of a project, and when the issue is beyond the authority of the project manager to resolve. These are generally issues that: (1) cannot be resolved within a project team, (2) are resolvable with action items, (3) can be escalated to the next level, (4) Are reactively discovered during the course of development, (5) affect program/project scope, costs, schedule, projected business performance, or high level design, (6) affect multiple projects or releases, and/or (7) involve groups outside the project that affect project delivery. The organization should accordingly monitor issues status and approve or reject resolutions. At the same time, the organization should communicate resolutions to stakeholders and affected parties and take corrective action as described above in the context related to management of performance tasks.

[0056] Returning to **FIG. 2D**, another step during process of controlling the SEPG project work in step **230** is updating the project plan and subordinate plans, step **237**. In particular, throughout the life cycle of the project, the project plan and subordinate plans (Risk Management, Configuration Management, Work Plan, Subcontractor Management Plan, Community and Sponsorship Plan) should be updated as appropriate by the organization to reflect any changes on the project that would effect the content of the documentation.

[0057] Referring again back to **FIG. 2A**, another task of the management and improve process **202** in project stage **200** is the rollout and support of SEPG projects, step **240**. During the rollout and support of SEPG projects in step **240**, new projects to be supported by the SEPG are identified and SEPG processes and tools are delivered to them. SEPG Liaisons may conduct process reviews of the SEPG-supported projects. Other project-created items referenced during the rollout and support task include the Service Level Agreement, Tailoring & Waiver Request, Metrics Workbook and Metrics Plan. The organization performs this task of step **240** to rollout SEPG processes and tools throughout the organization. The process of rollout and support of SEPG projects in step **240** is illustrated in greater detail in **FIG. 2E**. Specifically, the rollout and support of SEPG projects in step **240** comprises the steps of identifying new projects, step **241**; assigning a SEPG liaison, step **242**; conducting a project kickoff, step **243**; approving or disapproving waivers, step **244**; collecting project metrics, step **245**; conducting best practices reviews, step **246**; reporting best practices status, step **247**; and conducting project close out, step **248**.

[0058] Referring to **FIG. 2E**, during the identification of new projects in step **241**, the organization should identify new projects that are in the planning stages. Then, in step **242**, a SEPG rollout team leader assigns a SEPG liaison by evaluating the current workload among the available SEPG liaisons and select the most appropriate SEPG liaison for the current project. The rollout team leader preferably discusses the assignment with the SEPG liaison and sends a memo to the SEPG liaison informing him or her of the assignment, with a copy to the project manager and the SEPG program leader.

[0059] Continuing with **FIG. 2E**, the next step of conducting a project kickoff in step **243** is conducting a kickoff meeting, preferably within 2 weeks of notification of support to be provided by SEPG. The SEPG liaison should schedule a time to meet with the project management team to discuss the kickoff. The SEPG liaison should also ask a project manager for project documentation such as the proposal, the statement of work, estimating tool estimates, and the work-plan, if available. This discussion is to establish the project organization, identify projects to support, and to ascertain the scope of the SEPG effort.

[0060] Referring again to **FIG. 2E**, the next task in the rollout and support of SEPG projects in step **240** is to approve or disapprove waivers, step **244**. In particular, the SEPG liaison or SEPG manager should work with the project or proactively identify any area where a project may need a waiver. A waiver request template should be available through the SEPG or through the SEPG liaison. A senior management official should sign the waiver request form, thereby acknowledging its risk and impact to the project. Also, the SEPG liaison should review the waiver request form for completeness and determine the disposition of the waiver request. The SEPG liaison then forwards the waiver request form to the SEPG project manager with a recommendation for disposition. Subsequently, the SEPG liaison informs the project manager of the disposition of the waiver request.

[0061] Continuing with **FIG. 2E**, the next task is to collect project metrics, step **245**. Step **245** may include one or more undertaking that help to ensure that the project metrics are collected in an organized and efficient manner. These undertakings may include collecting monthly project metrics, collecting best practice reviews, collecting quality review results, collecting stakeholder scorecard data, and collecting people satisfaction survey results.

[0062] Continuing with **FIG. 2E**, another step is to conduct best practices reviews, step **246**. With the conducting of best practice reviews, the SEPG liaisons should conduct monthly best practice reviews with project management in order to track and monitor compliance with CMMI requirements. The review criteria are based on the CMMI process areas and can be found within a best practices matrix. The reviews identify nonconformance items and areas for improvement. The SEPG liaisons should review the information gathered from the team and enter comments into the notes/comments section of the first best practice review matrix. During the meeting, the SEPG liaisons and project managers should review the matrix and determine which items have been met and those that would require additional information or documentation (artifacts). Based on the review, the SEPG liaisons should complete the best practice matrix with documentation on additional information required from the project. Once the project reaches substantially complete compliance with the identified best practices, the best practice review focus becomes one of continued compliance and includes project team leaders and project team members. The SEPG liaisons should document and spot-check areas for compliance based on past reviews. These interviews may be conducted with or without project management in step **500**, described below.

[0063] Continuing with **FIG. 2E**, the next step is to report best practice status, step **247**. There are two ways to report on the best practice status. The SEPG liaison may document Non-Conformance Items (NCI) and issues in a best practice notes/comments section and submit this to project management after the conclusion of the Best Practice review, preferably within two days. The project manager generally has a short time, such as one week, to provide a response for each NCI, including a target completion date for correcting the NCI. Alternatively, the SEPG liaison may complete a best practice "Dashboard" report with updated scores, open items, and risks. The report should be sent to project management and SEPG rollout and program leaders.

[0064] Continuing with **FIG. 2E**, the next step is to conduct project close out, step **248**. The organization may implement phase close out. In phase close out, the SEPG liaison may approve or disapprove the waivers, collect project metrics, conduct best practice reviews, and report on best practice status, etc. This process of rolling out and support of SEPG projects, along with the control of process improvements (step **203**) described below, may then be repeated until the project is closed out. Next, in project closed out, the SEPG liaison works with the project manager and the management team to evaluate the overall impact and value of the SEPG program on the project. This evaluation should be done through the completion of a project close-out memo, verification of updates to the internal corporate resource by the project knowledge champion, verification of submission of the project's actual and estimated values to owners of the estimating tool via the profiling tool, collection of final project metrics, and collection of best practice and SEPG suggestions and comments.

[0065] Following the conducting of the close out in step **248**, the organization may complete the SEPG projects in step **290**, as depicted in **FIG. 2J**. To complete the SEPG projects in step **290**, the SEPG Liaison reviews the Closing Memo and SQA Debrief created by projects that are complete and no longer require SEPG support. Specifically, the organization verify the completion of the supported projects, review the documentation produced in steps **230** and **240**, and generate a list of best practices as desirable to produce a more mature product, respectively steps **292-296**.

[0066] Referring back to **FIG. 2A**, another task of the management and improvement process, step **202**, in the project stage **200** is to control process improvements, step **203**. The control of process improvements in step **203** brings together the tasks associated with controlling and conducting process improvement. As highlighted in the methodology, the Control Process Improvement, Rollout & Support SEPG Projects, and Complete SEPG Projects tasks are iterative in nature. Once processes and tools are improved, the SEPG is responsible for delivering these new processes and tools to its projects. Improving the control process in step **203** is comprised of the following steps: conducting a super software quality assurance (SQA) review (step **250**), conducting mini-assessments and appraisals (step **260**), conducting intermittent surveys (step **270**) and conducting process improvements (step **280**).

[0067] One aspect of improving the control process in step **203** is to conduct a super SQA review, step **250**. In step **250**, the SEPG plans and organizes a Super Software Quality Assurance (SQA) review of its documents. A report is prepared based on the findings and reviewed with the SEPG Team. The results of this review help the SEPG to improve

internal processes. The organization performs this step **250** to conduct software process and work product quality assurance reviews to verify project adherence to standards and procedures, such as any identified best practices. The quality program section of the Project Plan is described above in greater detail within the text accompanying **FIG. 2B**. Turning to **FIG. 2F**, the process of conducting a super SQA review in step **250** is described in greater detail. The first task of conducting the super SQA review in step **250** is to complete a SEPG project plan. In step **251**, the process improvement (PI) team leader typically (1) identifies documents and processes to be reviewed; (2) ensures that documents in the Project Plan and Work Plan are consistent; (3) identifies Super SQA reviewers, reviewees, and review criteria, (4) identifies roles and responsibilities; (5) identifies SQA metrics; (6) references the SQA plan in the quality section of the project plan; and (7) creates the SQA Plan.

[**0068**] In the next step of conducting the super SQA review of step **250**, the organization prepares for the super SQA review, step **252**, as depicted in **FIG. 2F**. In one implementation of step **252**, the PI team leader sets the super SQA review expectations. The PI team representative also submits reminder notifications to the super SQA reviewer based on any scheduled super SQA reviews, provides the Super SQA Reviewer with the Super SQA Reviewer training presentation and the SEPG Program SQA Plan, and provides the super SQA reviewer with standards and supporting documents to be reviewed. The PI team representative may further provide the super SQA reviewer with document owner contact and availability information, as defined in the CMMI. The super SQA reviewer then typically gathers and reviews criteria/standards and supporting documents from the PI team representative, reviews any super SQA reviewer training presentation, and schedules meetings with document owners.

[**0069**] Referring to **FIG. 2F**, the next step of conducting the super SQA review of step **250** is to conduct the super SQA review, step **253**. The super SQA reviewer should review processes and documents against review criteria/standards, conduct interviews with document owners, identify nonconformance items, and follow up with the document owners as needed for meeting with the requirements of the desired CMM level. The document owner participates in the interview with the super SQA reviewer and remains available to answer questions. The PI Team Leader should also remain available to answer questions.

[**0070**] In the next step **254**, the organization, through the SQA reviewer, prepares an SQA report to document a detailed summary of findings and recommendations, as illustrated in **FIG. 2F**. Specifically, the SQA Report should include an item number, the date reported, and an accurate description of nonconformance items. The SQA reviewer may further distribute the SQA Report to the PI Team Leader, and schedule discussion of nonconformance items with the SEPG Program Lead. The PI team representative also prepares and documents responses in the SQA Report, including an indication of whether the PI team representative agrees or disagrees with the reason statement, or otherwise determines the findings to be not applicable to the particular organization or project.

[**0071**] Subsequently, the organization should discuss nonconformance items, step **255** in **FIG. 2F**. In step **255**, the super SQA reviewer typically schedules and conducts a discussion of nonconformance items with the PI team leader, as well as verifying an adequate resolution of nonconformance items. Likewise, the PI team leader should discuss nonconformance items with the Super SQA Reviewer and refer disagreement items for facilitation to the SEPG Program Leader. A PI team representative should update the SQA report with proposed resolution(s) and projected completion date(s) for proposed changes/actions, and update and return the report, as well as all necessary documents, to the SQA reviewer for verification. The PI team representative further creates the System Investigation Requests (SIRs) and/or Change Requests (CRs) as necessary for the CMMI. The SIRs correspond to reports created to document errors in the product, and CRs conversely correspond to enhancements in the product that are beyond the scope of the original product. A SEPG liaison may then review and resolve escalated nonconformance items.

[**0072**] Returning to **FIG. 2F**, the next step of conducting the super SQA review of step **250** is to track the super SQA metrics, step **256**, by having the super SQA reviewer send the final report to the PI team leader. The PI team leader then forwards the final report and metrics to SEPG program leader, including metrics such as SQA schedule variance, and the number of nonconformance items. The PI team leader further tracks and reports on all open nonconformance items, while keeping project copies of documentation/reports.

[**0073**] Returning to **FIG. 2A**, the next step in improving the control process in the step **203** is to conduct assessments, step **260**. In step **260**, the SEPG coordinates activities to determine the state of an organizations processes and practices. This assessment can take many forms and can range from informal process assessments, mini-appraisals or full-scale evaluations. In any of these situations the organization can utilize outside contractors to conduct the review. Step **260** generally includes three stages: preparation, an on-site period, and wrap-up. After a series of interviews and review of documentation, the assessment results are then presented back to the organization. The organization should follow the same basic process when conducting an appraisal. In both cases, the organization may utilize an external group to execute the mini-appraisal and/or assessment. The process of conducting the mini-assessments and appraisals in step **260** is more fully illustrated in **FIG. 2G**.

[**0074**] As depicted in **FIG. 2G**, the first task in the assessments in step **260** is to select projects, step **261**. In step **261**, the organization carefully selects projects used for the assessment in order to paint an accurate picture of the organization's processes. Generally, from one to four projects should be selected for assessment. Projects may be selected using the following criteria: (1) the project should be representative of the work (present and future) of the organization, and aligned with the business objectives of the organization; (2) the project should have at least six people working on it; (3) the project should have a duration of greater than three months; and (4) the project should not have a critical activity or milestone during the on-site period. Additionally, at least one of the projects should be in the build stage. Personnel from the selected projects should also be available for interviews and presentations.

[**0075**] Returning to **FIG. 2G**, the next task in the mini-assessment and appraisal is to assess the development of an

onsite schedule, step **262**. The core of the assessment during step **260** is made up of the onsite period, which usually lasts from five to ten days. The onsite period consists of three basic activities: (1) gathering information through interview sessions with project leaders, team leaders, and functional area representatives; (2) mapping information to processes areas within the scope of the assessment through consolidation sessions; and (3) reporting findings and observations back to the organization through preliminary and final findings presentations. An executive session and a debriefing session is conducted to wrap up the on-site period. There is no limit to the number of hours spent on a particular activity; however, the assessment team is bound to the tasks that need to be completed before the next day. Training the assessment team is the other activity that can be considered part of the onsite period, as required, and can be scheduled just before the assessment activities begin.

[0076] As depicted in **FIG. 2G**, the next step in step **260** is to prepare assessment logistics, step **263**. During step **263**, a local assessment coordinator works with the assessment team leader to identify and prepare the logistics for conducting the on-site period. Logistical preparations include reservation of rooms for the on-site period (presentation, interview, and assessment team rooms); computer and presentation equipment (projectors, LAN connections, access to a phone, printer, copier, and general supplies); arranging for food and beverages, as well as accommodations for the assessment team, and confirming building/office access for the assessment team during the on-site period.

[0077] The next step in step **260** is to select assessment participants, step **264**, as depicted in **FIG. 2G**. In the selection of assessment participants in step **264**, a good cross section of the organization must be considered when selecting assessment participants. This is done through interviewing individuals from each selected project, including the project leader, project team members, as well as personnel from supporting groups, such as quality assurance, configuration management, and/or the database group. Individuals who have been involved in developing or maintaining software in the organization also should be included in the list of interviewees. Participants selected for the assessment should come from different parts of the project life cycle, have at least six months of experience with the organization (and at least three months with the project), and be able to articulate their observations and opinions about the organization and its projects. Selected participants preferably can dedicate from six to eight hours to the assessment activities during the on-site period. For the assessment to take place, the assessment sponsor must be present for the initial and final presentations.

[0078] Returning to **FIG. 2G**, the next step in the mini-assessment and appraisal is to develop organizational awareness of CMMI, step **265**. The organization performs this task to train assessment participants on what the assessment will involve, how the assessment will be conducted, and what the organization expects of assessment participants. Awareness activities may include training sessions and distribution of awareness materials to everybody in the organization. The assessment sponsor, or the organization's management (if different from the sponsor), must demonstrate their total support for the initiative.

[0079] As depicted in **FIG. 2G**, the next step in the mini-assessment and appraisal is to collect process information, step **266**. Step **266** is performed in preparation for the assessment of the collection of the documentation used in the current management and technical processes. Selected members of the organization fill out a maturity questionnaire to provide a baseline for scoping the assessment. The appropriate process documentation from both the organization and the projects being assessed should be collected to be reviewed by the team for the purpose of developing the assessment findings and observations. A documentation index should be created and, if required, the collected documents should be mapped to the CMMI process areas.

[0080] Returning to **FIG. 2G**, the next step in step **260** is to conduct the assessment, step **267**. In step **267**, the assessment team visits the organization with the objective of mapping the organization's management and development processes against the CMMI. In particular, the assessment team should be trained. The assessment team should further conduct an opening meeting and interview project leaders, team leaders, and functional area representatives. The assessment team should further review collected documentation and consolidate information gathered and map it to process areas in the CMMI. Subsequently, the assessment team should conduct follow-up interviews, as required, and prepare and present preliminary findings to management and staff. Likewise, the assessment team should prepare and present final findings to the organization, incorporating feedback received from the preliminary findings presentation. The assessment team then conducts any executive and debrief sessions and prepares a final report. At the conclusion of the assessment, the assessment team files an assessment report with the Software Engineering Institute (SEI), including with the assessment the final presentation and the summary report.

[0081] Returning to **FIG. 2A**, the next step in improving the control process in step **203** is to conduct a quarterly survey, step **270**. The organization performs step **270** to receive feedback from projects regarding the SEPG processes and tools. During step **270**, the SEPG designs and delivers a quarterly Process Improvement Survey to the projects it supports. The results of this survey are an input into the SEPG team's Process Improvement efforts. While named a quarterly survey, it should be appreciated that the survey may occur at other intervals and time periods. Results of this survey should be used to improve SEPG processes and tools. The process of conducting the quarterly survey in step **270** is depicted in **FIG. 2H**. The first task is to develop a survey process, in step **271**, for administering the process improvement survey. This survey may be administered by the SEPG. The responsibilities for this task should be assigned to a sub-team. In developing the survey in step **271**, the organization should consider the effect of the survey transmission medium and the methods through which the survey results will be analyzed. The organization should next develop the survey questions, step **272**. The organization should select question on which the SEPG would like to receive feedback. Preferably, when developing survey questions, the organization should choose nonleading questions. The organization should also preferably use a response scale that can be easily quantified, such as the Lickert scale. The organization should next, in step **273**, administer the survey using the medium chosen in step **271**. At this point, in step **274**, the organization may evaluate and analyze the survey results received from respondents using the process developed in step **271**. The organization may then use the survey

results to improve the SEPG processes and tools, step **275**. During step **275**, the organization may also publicize the results of the survey.

[0082] Returning to **FIG. 2A**, the next step in improving the control process in step **203** is to conduct process improvements, step **280**. The organization performs step **280** to manage process improvement activities. During step **280**, the SEPG takes the feedback it received from the SQA review, assessments, quarterly surveys, and feedback from other sources, and begins translating this feedback into improvements in SEPG processes and tools. Results from step **280** will be used to maintain, update, and develop SEPG processes, tools, and assets. Step **280** is illustrated in greater detail in **FIG. 2I**.

[0083] As depicted in **FIG. 2I**, the first step in conducting process improvements is to maintain and improve processes and tools, step **281**. In step **281**, anyone in the organization and its external reviewers may identify a process improvement opportunity (with a process, template, training, standard, tools, or the document repository itself). This could be in the form of an error (through a SIR), an improvement, an enhancement request (through a CR), or any other process improvement concern. The process improvement team leader should examine the process improvement opportunity, and a decision may be made on implementing the process improvement. If it is determined that the changes will be incorporated into the appropriate process asset (process, template, standard, training, etc.) in accordance with SEPG standards, then a SIR or CR may be documented to capture the change.

[0084] Returning to **FIG. 2I**, the next step in conducting process improvements, step **280**, is to define and update processes and tools, step **282**. In step **282**, anyone in the organization may identify a new process or tool to be defined, documented, and/or built. The first type of process to be created is an internal SEPG process that uses a new process template to document process flows and descriptions. The second type of process to be created includes processes and tools that are part of the SEPG methodology. Process definition is submitted to a SEPG team leader for review and approval. If a process is approved, it will be scheduled for release to the organization and/or SEPG team, depending on the type of process submitted.

[0085] As depicted in **FIG. 2I**, the next step in conducting process improvements, step **280**, is to pilot processes and tools, step **283**. Once the process or tool to be piloted has been completed and approved, it is time to determine the pilot group, time frame, scope and functionality, roles and responsibilities, and entry and exit criteria, as part of step **283**. The SEPG program manager may then work with a process asset owner to communicate the pilot's scope and expectations with the pilot group. The pilot group will be trained on the use and implementation of the process asset. The pilot is conducted with the process asset owner providing support to the pilot group in terms of providing clarification, additional training, or technical support, as necessary. At the end of the pilot period, the process asset owner debriefs with the pilot group or at least with a representative of the group to evaluate the pilot. Strengths and weaknesses of the process are identified, documented, and addressed.

[0086] Returning to **FIG. 2I**, the next step in conducting process improvements, step **280**, is to roll out processes and tools, step **284**. In step **284**, once feedback from the pilot group is incorporated into the process asset, it will be rolled out to the organization and/or SEPG team, as necessary. In step **284**, the SEPG liaisons have the primary responsibility of communicating the new processes and tools to the organization's projects.

[0087] Returning again to **FIG. 2I**, the last step in conducting process improvements, step **280**, is to assess and evaluate processes and tools, step **285**. During step **285**, the organization determines how processes and tools will be evaluated. The organization may further conduct intermittent or quarterly process improvement surveys.

Personnel Stage

[0088] Returning to **FIG. 1**, a second process within the organization management step **100** relates to personnel management, step **300**. The actions of step personnel management in step **300** generally relate to acquiring, organizing, and training the organization's personnel as needed to encourage the development of more mature products and achieve higher levels of CMM maturity. Organizational Training of step **300** is generally necessary to enable personnel to develop skills to meet specific roles and responsibilities during solutions delivery in step **600** described below. The process of personnel management is generally depicted in **FIG. 3A** and comprises the actions of designing a performance measurement infrastructure, step **310**; executing organization design and development, step **320**; and designing and deploying training, step **330**; and is now briefly described.

[0089] The designing of a performance measurement infrastructure in step **310** generally relates to planing activities related to performance measurement to provide the organization with a means for judging the effectiveness of the organization. The designing a performance measurement infrastructure in step **310** is summarized in **FIG. 3B**. The first step in step **310** is to validate and reach agreement on organization strategy, step **312**. Step **312** generally involves the organization's key stakeholders in the development and/or validation of the organization's strategy, specifically the organization's mission, vision, and overall objectives. Because performance measurement cascades down from the organization strategy, the organization's strategy should be understood and agreed upon by those accountable for implementing it.

[0090] Returning to **FIG. 3B**, the next step in designing a performance measurement infrastructure in step **310** is to produce a performance measurement scorecard, step **314**. In step **314**, the organization uses a balanced scorecard to measure performance. The balanced scorecard is a measurement tool that translates strategic objectives into a coherent set of performance measures. The scorecard is "balanced" because it measures both leading and lagging indicators. These indicators are expressed in financial and nonfinancial terms.

[0091] Subsequently, in step **316**, the organization implements the scorecard, as depicted in **FIG. 3B**. Implementing the scorecard generally requires that the specific information for performance goals, metrics, and targets be collected from the front lines. Furthermore, the organization should compile at the strategic level each performance perspective, objective, metric, and target. Also, the organization should

create and communicate top down, bottom up, and interactive performance measures. Subsequently, the organization should solicit feedback to test the effectiveness of metrics and how the performance measures fit in with the organization strategy.

[0092] Turning to **FIG. 3C**, the next step in the personnel stage **300** is to execute the organization design and development, step **320**. The organization performs step **320** to plan activities related to organization design and development. Step **320** involves coordinating the tasks associated with defining a strategy for the organization, assessing the organization against this strategy, and deigning and implementing a new organization. Note that step **320** assumes that the organization has a Human Resource Organization with the skills to design and implement new elements of the organization. The organization should to have experience in organization design and development. The substeps of the organization of design and development in step **320** are illustrated in **FIG. 3C**.

[0093] The first task in step **320**, as illustrated in **FIG. 3C**, is to identify an organization strategy, step **321**. In step **321**, business outcomes, core competencies and guiding principles are defined. These definitions will position the organization relative to business goals and objectives, vision and mission, management philosophy, customer values, critical behaviors and competitive environment. Specifically, the organization should identify an organization strategy before detailed organization design. The organization should be designed to reflect not only where the company is relative to strategy, philosophy, and the value proposition of its customers, but also where it needs to achieve a competitive advantage in the future. The organization strategy sets the direction by defining business outcomes, core competencies, and guiding principles that will be used to anchor the organization design and development process.

[0094] As depicted in **FIG. 3C**, the next step in the execution of the organization design and development in step **320** is to conduct an organization assessment, step **322**. It should be noted that the assessment differs from assessment used with SEPG. The organization assessment helps to identify the supports and barriers to transformation and build a case for implementation. An organization assessment in step **322** consists of assessing an organization's current situation, its future aspirations, and the gap between them; then identifying the initiatives required to fill these gaps. In step **322**, enablers and barriers to organizational transformation are identified and a case for implementation is built. This is accomplished through an assessment of the current organizational environment and future organizational aspirations, identifying the gaps between these two, and identifying a course of action to close those gaps.

[0095] Referring to **FIG. 3C**, the next task in step **320** is to design an organization infrastructure, step **323**, to create structures established to form individuals into the desired performing organization. The organization infrastructure's goal is to allow workers to effectively accomplish their tasks within the business process so that an overall goal is met. In step **323**, the organization will design a competency model and design roles, jobs, teams and organizational structures. The competency model definition will document the knowledge, skills and other attributes/abilities associated with high performance on a job. The roles, jobs, teams and organizational structures will document the responsibilities associated with: the individual (roles), groups of related roles (obs), groups of jobs (teams) and the span of control, reporting relationships and functional relationships of all of these components. Step **323** has two subtasks—to design a competency model, step **324**, and to design roles, jobs, teams and an organization structure, step **325**. Steps **324-325** may be conducted iteratively and/or concurrently. In designing a competency model in step **324**, the organization should group together related competencies to form a competency model. A competency is a cluster of related knowledge, skills, and other attributes/abilities associated with high performance on a job; and a competency model is a group of related competencies required to perform a career field such as team leader or technical coach. Similarly, during the process of designing an organization structure in step **325**, the organization defines the roles played by individuals, the jobs they hold, the teams in which they work, and the relationship between teams. The organization should logically define roles for individuals on the basis of their competencies, as decide in step **324**.

[0096] Returning to **FIG. 3C**, the next task in step **320** is to verify and validate an organization structure, step **326**. In step **326**, all components of the newly defined organizational infrastructure and reviewed to verify and validate that they meet the needs and goals of the organization. Specifically, the organization should verify and validate that any new organization design meets the needs of the business and is internally consistent. The organization should further confirm the new organization design with any subject matter experts and initiative sponsors. Continuing with step **326**, the organization should organize review sessions to validate how well the components of the new organization design (roles, jobs, teams, organization infrastructure, performance management infrastructure) fit together to support new initiatives.

[0097] The next task in step **320**, as illustrated in **FIG. 3C**, is to design a performance management infrastructure, step **327**. In step **327**, the organization's performance measurement scorecard is developed based on the organization's strategic objectives. This scorecard is then used to measure the organization's performance. Note that this task assumes that the organization has a Human Resource Organization with the skills to design and implement a performance measurement scorecard, and that the organization has experience in organizational performance management. Thus, in step **327**, the organization defines a means for assessing, rewarding, and developing the individuals in an organization. The performance management infrastructure has four components: (1) designing the performance management approach; (2) designing the performance appraisal instruments; (3) designing career progression; and (4) designing the compensation and reward structure. Overall, the organization should establish a system to reward individuals for desired contributions.

[0098] The final task in step **320** is to determine an organization infrastructure mobilization approach, step **328**, as illustrated in **FIG. 3C**. In step **328**, the organization determines and mobilizes the resources required to staff the new organization infrastructure established in step **323**. The organization may determine profiles for the ideal candidates, determine sizing and timing needs, and determine a sourcing approach. For instance, candidates may be profiled to fit job

descriptions, the organizations new size may be determined and an approach to sourcing and staffing jobs may be finalized and executed.

[0099] Returning to **FIG. 3A**, the next process in the personnel stage **300** is to design and deploy training, step **330**. In step **33**, the training needs of the organization are analyzed and a Training Plan is created, training is designed, developed and deliverer and post implementation support is provided. The organization performs step **330** to plan activities related to training employees. The design and deployment of training during step **330** is illustrated in greater detail in **FIG. 3D**. As illustrated in **FIG. 3D**, the first task in step **330** is to conduct a training needs analysis, step **331**, during which the organization identifies, by name, the participants to be trained, along with the courses and modules on which these participants will be trained. In step **331**, target audiences and participants are identified, and training courses and modules are planned. The training needs analysis in step **331** may be conducted in two phases. During the first phase, the organization gathers the high-level training needs for the organization. Similarly, the second phase consists of gathering the detailed training needs for the organization.

[0100] Returning to **FIG. 3D**, the next task in **FIG. 3D** is to develop a training plan, step **332**, as needed, to describe the organization's overall training approach. In step **332**, the overall organizational approach to training is documented. The training plan formed in step **332** may include any of following sections/topics: Objectives; assumptions; overall training approach; training courses, modules, and topics; training timeline; training logistics; and training evaluation.

[0101] The next task in step **330**, as illustrated in **FIG. 3D**, is to design training, step **333**. In step **333**, the training standards, templates, instructor and participant guides and the actual layout/format of training are developed. Specifically, the organization may develop the layout/format for the training materials. The development includes developing training development standards as well as templates for any instructor and participant guides.

[0102] Similarly, the next task in step **330**, as illustrated in **FIG. 3D**, is to develop training, step **334**. In step **334**, course content is created using the materials compiled during the training design step **333**. The organization may implement step **334** by creating the course content using the training development standards and instructor and participant guides. Other material created in step **334** may include "Train-the-Trainer" materials, visuals, job aids/handouts, and tracking documents. Using the training materials developed during step **334**, the organization may deliver training, step **335**, such as a Train-the-Trainer session, a pilot training session, and the actual training.

[0103] Returning to **FIG. 3D**, the next task in step **330** is to provide post-implementation support, step **336**. In particular, during step **336**, the organization should provide a short-term dedicated staff (e.g., one or two weeks) to support the users in applying what they've learned on the job. Furthermore, the support staff should be available to answer questions, identify and troubleshoot issues, and share best practices.

[0104] Throughout steps **200** and **300**, as well as other steps in the CMM in a Box Method **10**, the organization may need to commit to one or more actions (not illustrated) as required to achieve higher maturity levels in the CMM or the CMMI. Commit points are major decisions regarding reporting the progress of present work and obtaining authorization to continue. Commit points define the boundaries of each stage around key decisions related to content, context and course of action. For instance, a commit point may be implemented prior to the executing and design of an organization infrastructure in step **320**, to require that the design of the new organization structure must be approved before further implementation can proceed.

Program Management

[0105] Returning to **FIG. 1**, a second primary component of the CMM in a BOX method **10** of the present invention is program management step **400**. Program management step **400** generally concerns activities directly related to the creation and refinement of a program for implementing the CMM in a BOX method **10**. Specifically, program management **400** focuses on the continuous oversight needed to support the delivery of a business solution through multiple projects and releases. Appropriate disciplines, techniques, and tools are used in step **400** to plan and organize the work, and to manage the incremental delivery of the new business solution. As illustrated in **FIG. 4A**, the program management stage **400** generally comprises the steps of justifying the program (step **410**); planning the program execution (step **420**); organizing program resources (step **430**); controlling program work (step **440**); and completing the program (step **450**). These individual steps are now described in greater detail.

[0106] As depicted in **FIG. 4A**, the organization may first justify the program, step **410**. In step **410**, a Program Business Case is prepared. The program business case approach is referenced to develop the business case. The business case is designed to secure stakeholder support for the program. Topics of the business case include the program's understanding of the current problem, the proposed solution to the problem that is to be implemented by the program, and a cost/benefit analysis. Justification of the program to all key stakeholders and sponsors helps in the successful execution, implementation and completion of the program. The program business case should provide economic justification for the change journey and for each program within the change journey. The program business case generally explains why the sponsoring organization should change, what value it receives by changing, and what steps are necessary for a successful change. The program business case addresses three main components, including business context and change imperatives, value impact analysis, and change journey. The tasks in the justification of the program in step are generally illustrated in **FIG. 4B**.

[0107] Referring to **FIG. 4B**, the organization first determines an economic evaluation approach, step **411**, to obtain a "buy in" from the appropriate stakeholders in the sponsoring organization on the overall implementation approach for the program. Specifically, the organization tries to demonstrate the tangible benefits of a program to the affected parties. Step **411** attempts to show the process of implementing the program as an investment with positive, long-term benefits.

[0108] Returning to **FIG. 4B**, the next task in step **410** is to create a model structure, step **412**. In step **412**, the

organization obtains internal agreement regarding the structure of the model used to determine the benefits of implementing the program. For example, benefits to be derived may be expressed in terms of increased market share or reduced operating costs. In this way, affected parties may communicate the program's effects in terms of similar measures of costs and benefits. As suggested in **FIG. 4B**, the organization may also attempt to justify the program by forecasting baseline business performance, step **413**. In other words, the organization may attempt to determine how the organization and its comprising units would perform without implementing the program. Continuing with **FIG. 4B**, another task in step **410** is to project net change journey benefits, step **414**. The organization performs step **414** to predict and quantify the benefits that will be derived from implementing the program.

[0109] The next step in step **410** is to assemble a business case, step **415**, using the results assembled during steps **411-14**. The organization may perform step **415** to document rationale for implementing the program. Ultimately, this documentation may serve as a motivational tool for change within the organization.

[0110] Returning to **FIG. 4A**, the next task in the program management stage **400** is to plan the program execution, step **420**. During step **420**, the organization develops plans for the program itself, financial management and resource management. Program approaches are referenced during the creation of these documents. These plans guide the continued implementation of the program and are what the program will monitor itself against during later tasks. The individual tasks of step **420** are illustrated in **FIG. 4C**. In step **420**, the organization may develop a consolidated program plan, which documents the necessary tasks, effort, schedule, and costs for all releases of a business capability. The organization may also refine a program statement of work, and develop bottom-up project plans. Subsequently, the organization reconciles these plans with the top-down plans to generate a program baseline. The organization may have performed step **420** initially during program planning, in conjunction with or prior to the analysis stage **700** described below. Then, step **420** may be reinitiated during the course of the program as replanning is required by program management.

[0111] Looking at **FIG. 4C**, the first task of the plan program execution in step **420** is to plan program processes, step **422**. The organization may specifically determine all the management processes necessary to support the program. These relate to resources, vendors, quality, configuration, releases, issues, problems, risk, finances, contingency, and performance reporting. The organization may establish and document goals and metrics for each management process. The organization should begin this task package at the start of the program, and refine the management processes as the program progresses. The organization may perform this initial planning at the program level to help ensure that there are no gaps or overlaps of activities. While all the activities within the Delivering phase may be required for a particular business capability, it is unlikely that all of the activities should fall within the scope of a single project team. If the initial distribution of the activities to project type is done at the program level, the risk of missing or duplicate activities is limited.

[0112] Returning to **FIG. 4C**, the next step in the plan program execution, step **420**, is to develop a program budget, step **424**. In step **424**, the organization may establish a program budget that augments the cost baseline established in the program plan. The program budget provides the additional information needed by program management to manage the day-to-day financial affairs of the program.

[0113] Another step in the plan program execution, step **420**, is to develop a program communications plan, step **426**, as illustrated in **FIG. 4C**. In step **426**, the organization may identify and plan messages to program personnel, key program executives, and other stakeholders in the program. In that way, step **426** addresses the communication needs within the program teams.

[0114] Subsequently, the organization performs the task of finalizing the program plan, step **428**, as depicted in **FIG. 4C**. In step **428**, the organization may assemble the composite program plan. The Program Plan compiles the outputs from the plan management process **422** with the development of a program plan in step **424**. The organization may then obtain executive and other appropriate management understanding and approval of the fully elaborated program plan and its components. The organization further briefs all key stakeholders (i.e., executive management, and impacted business operations) to ensure their understanding of, and commitment to, the program plan. This is crucial, because following this task: (1) the program should be described to the organization, and (2) more personnel should be assigned to the program. The organization may then take this opportunity to resolve any unclear or incorrect stakeholder expectations.

[0115] Returning to **FIG. 4A**, the next step of the program management **400** is to organize program resources, step **430**. During the step **430**, resource requirements are analyzed and aligned so as to meet program objectives. As the program determines its resource needs, the Program Resource Request is completed to obtain the resources. Organize Program Resources is linked closely to planning the program's execution and pertains to staffing of the overall program. Under the Plan Program Execution task, the Program will plan for and deal with resource questions related to subordinate projects. Specifically, the organization may generally analyze resource requirements, initiate the procurement of goods and services, obtain human and physical resources from participating entities, assign these resources to projects, and release the resources upon project completion. The organization may perform step **430** throughout the life of the program created and implemented in step **400**.

[0116] As illustrated in **FIG. 4D**, in order to obtain and deploy resources, the organization may analyze resource requirements, step **432**. This task analyzes resource requirements as defined in a program management resource plan. Resource requirements are consolidated from project needs and should generally include desired resource provider (generally the organization itself), if previously determined, resource skill/type, and time period (such as monthly). Continuing with step **432**, the organization may create a program resource management plan that forecasts resource needs by stage and capability release.

[0117] Returning to **FIG. 4D**, the organization may further obtain and deploy human resources, step **434**. Human resources are obtained by initiating a request with the

Human Resources Organization, interviewing potential candidates, and selecting the candidate that best fits the requirements. Human resources are then assigned to projects as they arrive at the program. This task, alternatively, may be assigned to the projects. The program resource management plan may reflect actual information regarding the resource request.

[0118] Returning to **FIG. 4D**, the organization may also procure and deploy physical resources, step **436**. Physical resources are generally procured by initiating a resource request, evaluating the potential resources, and selecting the resource that best fits the requirements. Resources are then assigned to projects as they arrive at the program. The Physical Assets Inventory and the Program Resource Management Approach are generally both updated to reflect actual information regarding the resource request.

[0119] Referring again to **FIG. 4D**, the organization also releases resources, step **438**. When human resources are assigned to projects, they receive a "roll-off" date indicating when these human resources are eligible for reassignment within or outside the program. If not reassigned inside the program, human resources are released to appropriate human resources departments for reassignment. Similarly, physical resource utilization is scheduled by each project, and these resources are returned upon completion of use. This process generally coincides with the completion of each stage of work. At that point, a determination should be made whether to retain or release the human and physical resources from the program. At this point in process **430**, the entire process **430** may repeat if there are more program resources to organize, decision **439**.

[0120] **FIGS. 4A and 4E** illustrate another step in the program management process, the control of program, step **440**. In step **440**, program management monitors program performance against program plans. Deviations from the plan are monitored. Corrective action is taken to resolve deviations as necessary. Program plans are updated to reflect modifications to the program. Step **440** generally provides leadership to guide the planning and execution of program work. In step **440**, the organization may maintain key working relationships within the program, while monitoring and developing the skills and performance of program management team members. The organization may further identify and assess problems with program performance, and specify corrective actions as needed. The organization may evaluate program metrics to determine progress toward program objectives, and to determine whether or not the current metrics are still relevant. The organization may further assess whether or not the program is on track by reviewing program, project, and vendor performance.

[0121] The first task of step **440** is to administer the program, step **441** as illustrated in **FIG. 4E**. An effective program administration results in a planned, organized, and managed program management office performing a wide range of cost-effective activities. As required, the teamwork environment requirements list deliverable should be updated to reflect relevant changes in the program. Program leaders should also strive to maintain a culture that encourages program participants to achieve maximum results. Program leaders should also communicate the common program vision to inspire others to support program goals.

[0122] A second task in step **440** is to report performance, step **442**, as illustrated in **FIG. 4E**. The organization may process and prepare reports for cost/schedule and other performance data (e.g., quality, risk, resource, etc.). This should involve a standard set of reports as defined in the program performance reporting approach section of the program plan. Any ad hoc reports requested by program management may also be prepared.

[0123] Returning to **FIG. 4E**, another task in step **440** is to perform financial management, step **443**. Specifically, the organization may report, monitor, and account for the program's financial performance and results by performing the financial management functions as specified in the Program Financial Management Approach section of the Program Plan. Similarly, in step **444**, the maintenance of administrative policies and standards, the organization may update and refine the administrative policies and standards on the basis of their effectiveness and the evolving needs of the program, as illustrated in **FIG. 4E**. The organization should further communicate the changes to the program team members.

[0124] Returning to **FIG. 4E**, the next task in step **440** is to conduct, as necessary, ongoing program orientation and training, step **445**. In step **445**, the organization may conduct periodic orientation and training sessions as new members join the program, as new types of training are required, and as team members need additional career development opportunities. Likewise, in step **446**, the organization monitors a program communications plan to help to ensure that the appropriate groups accomplish their responsibilities. The program management office itself may also be responsible for performing some of the activities as directed in the program communications plan.

[0125] In another group of steps illustrated in **FIG. 4F**, the organization may complete the program, step **450**. In step **450**, a program closeout report is prepared along with other program closeout documentation. The program is demobilized and responsibility for the program is transferred to the necessary parties. The organization achieves an orderly and successful program closure by formally transferring responsibility for the solution components to the operational units, obtaining formal management acceptance of the competitive solutions delivered, releasing the remaining human and physical resources to their providing organizations/owners, and completing a disposition of all program documentation and other materials.

[0126] As illustrated in **FIG. 4F**, one step in the completing the product is to complete documentation, step **452**. The activities needed to complete all program documentation include preparing any final documentation needed to close the program, including final cost, performance reports, etc. Additionally, a final review of the documentation is performed in step **452** to ensure that it is complete and conforms to program standards. The organization should also identify materials that should be shared across the organization, especially process improvements, methodologies, techniques, estimating models, and reusable components. The organization should also take steps to ensure that the materials are included in the appropriate repositories. The program documentation and other materials are transferred to any appropriate locations. Key deliverables are sent to the software engineering process group team, as determined. A summary of the program's final disposition, assets, records, and other appropriate, relevant information should be contained in the program closeout report deliverable.

[0127] Continuing with **FIG. 4F**, another step in the completion of the product is to transfer program responsibility, step **454**. This activity transfers responsibility for the business capability to the appropriate organizational unit(s). Responsibility is assumed by the organizational units responsible for the continuing operation, maintenance, and use of the business capability and its underlying components.

[0128] Returning to **FIG. 4F**, another step in the completion of the product is to demobilize the program, step **456**. The resources to be released include the remaining program participants and all facilities (including furniture and equipment). The human resources are returned to the organizational units that provided them. The physical resources are released or returned to their owners. Any remaining procurement agreements (purchase orders, contracts, leases, rental agreements, etc.) are closed out.

Project Management

[0129] Returning to **FIG. 1**, the CMM in a BOX method **10** generally calls for the organizations to concurrently perform project management **500** with the program management **400**. The project management **500** is generally depicted in **FIGS. 5A-5O**. Project management **500** generally concerns activities and structures directly related to the creation and refinement of a project or product for sale. Project management **500** controls the delivery of the specific components from which a business solution is derived through the balanced management of Scope, Quality, Effort, Risk and Timeline (SQERT). Project management **500** focuses on making critical decisions and managing risk that will ensure the delivery of the promised scope, on time and within budget at the agreed-upon levels of quality. When a program management function exists, project management works closely with program management to execute the SQERT activities in relation to the delivery of multiple projects under one overall program. As illustrated in **FIG. 5A**, project management **500** generally includes planning of project execution (step **510**); organization of project resources (step **520**); control project work (step **530**); completion of the project (step **540**); an SQA review execution (step **550**); and supplier agreement management (step **560**).

[0130] **FIG. 5B** presents the individual tasks required in the planning of project execution, step **510**. The organization may perform this task package **510** at project initiation to define pieces of the initial Project Plan and subordinate plans that should be used to manage the execution of the project. The tasks associated with Plan Project Execution, such as planning and estimating, are performed throughout the project lifecycle at predefined decision points, and whenever replanning is required. During the planning of project execution in step **510**, the organization may tailor the process, step **512**, to suit a project's needs by using known tools or means. The organization may further request a waiver for any required steps that should not be followed on the particular project.

[0131] The organization may further implement the planning of project execution, step **510** through the development of a project plan, step **514**, as illustrated in **FIG. 5B**. The organization may perform this task using a template to customize a specific project. The project plan describes the project approach for the project timetable, metrics, organization, supplier agreement management, communication and sponsorship strategy, training, quality initiatives, software system development process, configuration management, logistics, facilities, tools, and purchasing. The project plan also describes the project approach for training, metrics tracking, and roles and responsibilities on the project. The organization may further use a best practices matrix, a metrics plan, a DAR reference document, and a training needs matrix to develop the project plan, as defined in the CMMI. The DAR reference document describes the formal DAR process and provides guidelines for identifying DAR triggers, setting thresholds, and selecting the best techniques. This information should be used to complete the quality program section of the project plan. The metrics plan generally contains the list of required and recommended metrics that a project should include in the project plan.

[0132] The planning of project execution, step **510**, continues in **FIG. 5B** with the development of subordinate plans, step **516**. In step **516**, the organization may develop the appropriate subordinate plans to satisfy the needs of the project. For instance, the organization may define, as needed, subordinate plans for subcontractor management, risk management, communication and sponsorship, and configuration management. All projects require the creation of a work plan, and an organization may create a bottom-up or task-level project work plan based upon estimates. Critical paths and dependencies are defined and managed within the project work-planning tool, such as the Microsoft Project and Project Workbench®.

[0133] Returning to **FIG. 5B**, the next step in plan project execution **510** is to develop project estimates, step **518**. The development of project estimates in step **518** is analogous to the development of project estimates in step **218**, as described above in **FIG. 2B**. Specifically, the organization may develop project estimates, step **518**, using an estimating tool as a starting point for the estimates. For instance, estimates may be developed using the following steps: (1) tailor tasks and estimating model; (2) determine estimating factor values; (3) define work packages; (4) determine a timeline for the estimate; (5) reconcile a present estimate to an initial estimate; and (6) document assumptions used to form the estimates. The organization preferably further validates any estimates by verifying estimates against estimates or actual results from comparable projects. To form accurate estimates of available resources, the organization should further consider other resource-tapping activities, such as community involvement, recruiting, mentoring, and training, when evaluating resources.

[0134] Another step of the project management **500** is to organize project resources, step **520**, as illustrated in **FIG. 5C**. The organizing of project resources in step **520**, as well as in substeps **521-25**, are analogous to steps **220-25**, described above in **FIG. 2C**. The organization can perform these tasks as needed to organize the project's human resources, establish other resources, to make work assignments, and to develop training enabling resources. In step **520**, the project focuses on obtaining, assigning and training its human resources and establishing the project's other resources. This task is performed iteratively as needed to organize, mobilize and manage project resources throughout the execution of the project.

[0135] Turning to **FIG. 5C**, the first step in organizing the project resources in step **520** is to refine resource needs, step

521. In this step **521**, the organization defines the team organization structure, schedules the work, and defines the human and physical resource needs of the project. These tasks are performed in view of each project's requirements. By refining resource needs in step **521**, the organization helps to ensure that project staffing and facilities needs are met on a timely basis without affecting the completion date and the quality of the work. The organization may complete this refining of resource needs in step **521** by (1) determining project organization structure; (2) balancing a development schedule using human resource guidelines; and (3) refining physical resource needs that were outlined in the logistics, facilities, and tools section of the project plan formed in step **210**.

[**0136**] Returning to **FIG. 5C**, the organization continues the organization of the process resources in step **520** by establishing project standards and goals, step **522**. The establishment of project standards and goals in step **522** is accomplished by developing, modifying, and adopting administrative and project-specific project standards and procedures. Examples of administrative procedures are employee availability checklists, time accounting procedures, status reporting, vacation scheduling, etc. Project standards and procedures include design and development standards, and the use of project-specific tools. The establishment of these standards and procedures preferably improves the organization's communication, operating efficiency, and overall control of the project.

[**0137**] The organization continues the step of organizing the process resources, step **520**, through organizing a project team in step **523**, as also illustrated in **FIG. 5C**. The selection of project team members is based on project requirements. Other elements in the organization of a project team are the finalization of the project team's organization structure and documentation in the organization chart of the project plan. The organization should further update a training needs matrix to document (1) the training required of each project team member and (2) the proposed means for fulfilling the training. This document is used to track project team member training. In another implementation, organizing a project team in step **523** further requires the organization to determine, as a team, the project's mission, vision, and charter, and then to document these determinations in a project plan and orientation binder that is created as required for the CMM.

[**0138**] Returning to **FIG. 5C**, another task in the organization of project resources in step **520** is to establish other resources, step **524**. Specifically, the organization performs this task to organize the physical resources, such as hardware or software, provided by program management and to develop the orientation and/or training needed to support the activities of the project team. The establishment of other resources in step **524** helps create a work environment that promotes communication, collaboration, and group cohesion.

[**0139**] Also as illustrated in **FIG. 5C**, the organization of project resources in process **520** further includes enabling resources, step **525**. Organizations perform this step to orient and train team members, manage the physical resources assigned to the project, and coach and evaluate team members. The enabling of resources in step **525** aids the project manager in motivating and challenging team members and while helping to ensure that various project personnel believe their work to be important. Specifically, the organization should communicate the project's mission, vision, and charter to new team members. Large projects may also elect to formalize these items at the program level, and projects may conduct one or more meetings that include all team workers.

[**0140**] As illustrated in **FIG. 5D**, another step in the project management **500** is to control project work, step **530**. In step **530**, project management monitors the execution of the project against project plans and makes adjustments as necessary. Project Status Reports are prepared for the Project Sponsor. Potential and actual problems are identified through the measuring and monitoring of progress and performance against the Project Plan. Depending on the type of problem identified, an Issue, Risk, SIR or CR is logged. Project management is expected to take appropriate corrective actions to resolve problems that are discovered. Step **530** and constituting tasks **531-37** closely correlate, respectively, to steps **230-37**, described in **FIG. 2D** and its accompanying text. The organization performs step **530** to control project execution throughout the project's life cycle. The control of project work in step **530** includes identifying potential and actual problems by monitoring and measuring progress against the project plan.

[**0141**] As illustrated in **FIG. 5D**, the controlling of project work in step **530** begins with the releasing of work packages, step **531**. To release work packages, the organization should assemble and release work packages according to the work plan, and communicate their requirements to the assigned team members. Work packages are generally described in the CMM criteria and generally relate to the task and functions given to the various workers in a project. The project team then performs the work needed to develop the required deliverable good. During step **531**, the organization preferably acts to ensure that each team member understands assigned responsibilities, including target dates and budgets. Furthermore, the organization should encourage each team member to provide input regarding various assigned responsibilities, including target dates and budgets, and to accept and carry out these assigned responsibilities.

[**0142**] As depicted in **FIG. 5D**, a following step in the control project work, step **530**, is measuring performance, step **532**. The measuring of performance in step **532** generally includes capturing actual results and calculation of metrics in order to manage performance. Capture metrics, as outlined in the organization metrics plan formed in step **510**, include cost, effort, scope, quality, and schedule. The organization should further track project infrastructure/technical requirements, such as hardware, software, and performance requirements, that were outlined during planning in step **510**. The organization should also analyze any deviations from the project plan and identify, in a timely manner, the causes for the deviations.

[**0143**] Concurrent with the measuring of performance in step **532** is managing performance, step **533**, as illustrated in **FIG. 5D**. Managing performance in step **533** generally requires the organization to manage project performance against the previously defined project and work plans. To project performance in view of the project and work plans, the organization proactively assesses performance, status, quality, and risk. When the actual results from the develop-

ment of the project do not match the plans, the organization should further determine alternative goals or actions. The implementing organization may further obtain approval for corrective actions, and then take corrective actions. The corrective actions may include, but are not limited to, work process changes, team building, training, increased or decreased supervision, work assignment changes, reassignment of team members, initiation of risk responses, the change of requests to be pursued with program management as part of the configuration management process, project replanning changes that specify needed modifications to the project plan, project plan revisions (work package changes, etc.) or escalation to program management. The organization should also reevaluate project decisions throughout the project life cycle, when project triggers or other issues, risks, etc. arise. In step **533**, the organization may also manage team member performance according to organizational standards and tools.

[0144] Continuing with **FIG. 5D**, following the measuring of performance in step **532** and the managing of performance in step **533**, the organization communicates project status, step **534**. During the step **534**, the organization generally develops and communicates project status to all project stakeholders according to the Project Plan. The project stakeholders include project and senior management and other affected groups. The organization further conducts status and review meetings involving affected groups as appropriate. During the communication of project status in step **534**, the organization should document meeting minutes as required for the CMM.

[0145] Continuing with **FIG. 5D**, following the communication of project status in step **534**, the organization obtains acceptance of interim deliverable goods, step **535**. Obtaining acceptance of interim deliverable goods in step **535** generally requires that the organization obtain acceptance of interim deliverables by all designated stakeholders, as appropriate, at key interim points throughout the project life cycle. Any acceptance of final deliverables takes place in connection with completing the program.

[0146] Another task in the control of project work in step **530** is to execute project management processes, step **536**. The organization should execute these processes in conjunction with other project control activities, such as measurement activities and status reporting. Also, the project management processes may occur continuously, periodically, or may be event driven. One project management process in step **536** is risk management, which addresses the identification, analysis, and avoidance/mitigation aspects of risk management on a project. One project management process is risk identification, during which the organization identifies, names, and describes the various risks. The organization should further generate a list of specific incremental risks in the project's risk-tracking tool. The organization documents known triggers for a risk, the potential damage for each risk item, and references for the sources of risk. Another risk management task in step **536** is risk analysis, in which the organization analyzes the identified risks. In risk analysis, the organization should classify the risks and include any additional information necessary to support the analysis. The organization may then select a rank/prioritized list of top risks. For instance, the organization may create a list of the top five risks to a project. Another risk management task is risk avoidance and mitigation. Risk avoidance activities address the sources of a risk, thereby reducing the probability that it should become a problem. For a top-ranked/prioritized risk, the organization should identify how the risk can be avoided. Risk mitigation measures attack the consequences of a risk, reducing the risk's potential impact on the project. For the top-ranked/prioritized risks, the organization may identify actions to reduce the impact of the risk if it occurs. The organization may also use DAR to assess the risks.

[0147] Another project management process in the execution of project management processes in step **536** is scope management, which addresses the acceptance of requirements to define scope and the requirements of change control process. For instance, one scope management task is requirements development. During the task of requirements development, the organization identifies and documents requirements needed to promote and ensure bi-directional traceability, so that the organization may trace requirements between the development and the testing of the requirements. As with all work products, requirements are preferably placed under configuration management (CM), as defined in the CMMI. Another scope management task is requirements acceptance, during which the organization documents and reviews requirements with all affected groups and obtains acceptance from the affected stakeholders. The organization should further establish baseline standards for satisfying the requirements. Another scope management task for the organization is to make any required changes to the requirements and their baselines. The organization generally follows the project's change control process for any changes to baselined requirements. Specifically, the organization submits a change request; reviews a change request; performs impact analysis, including cost, schedule, and efforts impacts; determines disposition; implements change, including associated impact to other work products and activities; and notifies requester and affected groups. Again, the organization may determine if it is necessary to use DAR to assess changes in scope.

[0148] Another project management process in step **536** in the execution of the project management processes is configuration management. This task addresses the set of activities performed to establish and maintain the integrity of the project work products throughout the project's life cycle. One set of configuration management tasks relates to configuration identification activities. During the configuration identification activities, the organization identifies, names, and describes each of the configuration items that should be placed under configuration management. In particular, all work products should be placed under some type of configuration management. During the configuration identification activities, the organization generally uses the CM plan to define a baseline for the configuration items and to indicate the level of configuration management for each item. Another configuration management process in step **536** is configuration of control activities. Generally, the organization requests, evaluates, approves or disapproves, and implements changes to the baselined configuration items defined during the configuration identification activities. All of the configuration items should be archived and placed under the project's documented change control process. Configuration of status accounting activities is another configuration management process in step **536**. During this process, the organization records and reports the status of the project's configuration items using a configuration manage-

ment status report. Similarly, the organization should further perform configuration audits. Specifically, the organization may, using the CM plan, determine the extent to which actual configuration items reflect the planned configuration items. The purpose of this task is to ensure that the entire configuration is correct and complete. The organization should further document results as required in the CMMI, using a configuration audit.

[0149] Another project management process of the execution of the project management process in step **536** is issue management and escalation. This task involves the identification and documentation of issues using an issue tracking tool, as well as a review of the issue and an analysis of any impact on deliverables, scope, contingency, resources, costs, schedule, and/or quality. Specifically, the organization should identify a resolution approval party, an issue's owner, and determine expected time frames. The organization may also determine if it is necessary to use DAR to assess the issue, as described above. The organization may further research and identify issue solution alternatives. Subsequently, the organization may refer the issue to program/senior management when: (1) the project manager cannot resolve the issue internally, (2) when the issue impedes the progress of a project, and when the issue is beyond the authority of the project manager to resolve. These are generally issues that (1) cannot be resolved within a project team, (2) are resolvable with action items, (3) can be escalated to the next level, (4) are reactively discovered during the course of development, (5) affect program/project scope, costs, schedule, projected business performance, or high-level design, (6) affect multiple projects or releases, and/or (7) involve groups outside the project that affect project delivery. The organization should accordingly monitor issues status while approving or rejecting resolutions. At the same time, the organization should communicate resolutions to stakeholders and affected parties and take corrective action as described above in the context related to management of performance tasks.

[0150] Returning to **FIG. 5D**, another step during the process of controlling the project work in step **530** is to update the project plan and subordinate plans, step **537**. In particular, throughout the life cycle of the project, the project plan and subordinate plans (Risk Management, Configuration Management, Work Plan, Subcontractor Management Plan, Community, and Sponsorship Plan) should be updated as appropriate, by the organization to reflect any changes on the project that should affect the content of the documentation.

[0151] Another step of project management **500** is to complete the project, step **540**, as illustrated in **FIG. 5E**. In step **540**, project closeout is performed and overall project results are evaluated. Project Management verifies that all activities for a project are complete so that all resources can be released and all documentation and responsibilities can be transferred to the necessary parties. In this way, step **540** enables Project Management and the Project Sponsor to measure the success of the project and use results of the project as inputs to future efforts. A first step in completing the project in step **540** is to obtain a formal acceptance of deliverable(s), step **541**, and this task **541** entails obtaining sign-offs on the final deliverables from the appropriate stakeholders. In effect, each stakeholder should agree that the project is, in fact, complete. Another step in completing the project during step **540** is the preparation of final documentation, step **542**, in which the organization completes final revisions and packaging of deliverables. Likewise, the organization furthers the completion of the project in step **540** by transferring responsibility for deliverables, step **543**, to formally transition responsibility for the deliverables to the appropriate parties. The transfer of responsibility for deliverables in step **543** generally includes the transition of training materials, operations manuals, and other supporting documents.

[0152] Continuing with the completion of the project in step **540**, the organization evaluates the project, in step **544**, by assessing the success of the project, summarizing the project's accomplishments, discussing/documenting any items for improvement, and channeling the resulting information through the appropriate quality management process. The various results of the evaluation of the projects in step **544** should be recorded in a closing memo, as specified in the CMMI. The results of the evaluation may include (1) reviewing the project work plan; (2) updating the estimates; (3) sending the project's actual results to the owners of the estimating tool; (4) submitting final project metrics to the Software Engineering Process Group (SEPG); and (5) conducting an SQA debriefing to discuss results of the SQA program and also process improvement points. Another step in the completion of the project, step **540**, is to release resources, step **545**. The organization performs step **545**, for instance, to "roll off" human resources from the project and to return equipment and supplies to the appropriate custodian, thereby freeing these resources for use on other projects.

[0153] Returning to **FIG. 5A**, the next task in the project management **500** is software quality assurance (SQA) review execution, step **550**, the substeps of which are illustrated in **FIG. 5F**. During the SQA review execution of step **550**, the organization may conduct software process and work product quality assurance reviews to verify project adherence to standards and procedures. The first step of the SQA review execution **550** is to complete a project plan and metrics workbook, step **551**. In this way, the project manager and SEPG liaison are encouraged and required to identify deliverables and processes to be reviewed; ensure that deliverables in the Project Plan and Work Plan are consistent; identify reviewers, reviewees, and review criteria; identify roles and responsibilities; identify SQA metrics; complete the quality program section of the project plan; and update the metrics workbook with the SQA review schedule.

[0154] Another step of the SQA review execution **550** is to prepare for an SQA review, step **552**. In the SQA review, the project manager provides job accounting information to the SQA reviewer and sets SQA review expectations. In preparation for the SQA review during step **552**, a deliverable owner (i.e., a party responsible for producing a deliverable product or service) provides the deliverable to be reviewed, where "deliverable" is defined in the CMMI. The deliverable owner further provides contact and availability information to the SQA reviewer and provides review criteria and standards to the SQA reviewer. In response, the SQA reviewer gathers the deliverable product or service, reviews the proposed review criteria and standards, schedules a meeting with the deliverable owner, and receives job accounting information from the project manager.

[0155] Returning to **FIG. 5F**, another step of the SQA review execution **550** is to conduct the SQA review, step **553**. During the SQA review in step **553**, the SQA reviewer generally reviews deliverables against review criteria/standards, identifies nonconformance items, and follows up with the deliverable owner as needed to meet the requirements of the CMMI. At the same time, a SEPG liaison reviews the project management deliverables against a best practices matrix. For the CMMI, the deliverable owner should be able to continue answering any questions.

[0156] Another step of the SQA review execution **550** illustrated in **FIG. 5F** is to prepare the SQA report, step **554**. The SQA reviewer prepares a detailed summary of findings and recommendations, including item number, date reported, and an accurate description of nonconformance items. The SQA reviewer then distributes the SQA report to the deliverable owner and the SEPG liaison. The deliverable owner should then document responses in the SQA report template.

[0157] Continuing with **FIG. 5F**, another step of the SQA review execution **550** is to discuss nonconformance items, step **555**. Specifically, the organization should require the deliverable owner to discuss any nonconformance items with the SQA reviewer. In addition, the deliverable owner updates the SQA Report with proposed resolution(s) and projected completion date(s) for agreed upon items. The deliverable owner also escalates disagreement items for facilitation and updates a return report, as well as any necessary documents to the SQA reviewer for verification. In response, the SQA reviewer should discuss nonconformance items with the deliverable owner and verify the resolution of nonconformance items. During step **555**, the SEPG liaison and the project management should also resolve escalated nonconformance items and resolve, on a case-by-case basis, any issues that may arise due to scheduling conflicts between the SQA reviewers and the deliverable owners.

[0158] Continuing with **FIG. 5F**, another step of the SQA review execution **550** is to track SQA metrics, step **556**. In step **556**, the SQA reviewer sends the final report to the deliverable owner and the SEPG liaison. At this point, the SEPG liaison may update an SQA tracking tool and forward the final report and metrics to the project sponsor and project manager. Typically, the SEPG liaison includes metrics such as the SQA schedule variance; the number of nonconformance items; the cost/savings of the SQA program; the value added by conducting SQA reviews; and a best practices percentage showing compliance with desired best practice policies. As required by the CMMI, the project manager keeps copies of documentation and reports.

[0159] Another aspect in the project management **500** is supplier agreement management, step **560**, which is generally illustrated in **FIG. 5G**. The supplier agreement management **560** comprises subcontractor management in step **560**(*a*) and product acquisition in step **560**(*b*). Specifically, the subcontractor management in step **560**(*a*) comprises the tasks of planning subcontractor management, step **561**; organizing subcontractor management resources, step **562**; controlling subcontractor management, step **563**; and completing subcontractor management, step **564**, as illustrated in **FIG. 5G**. Likewise, product acquisition in step **560**(*b*) comprises the tasks of planning product acquisition, step **565**; organizing product acquisition, step **566**; controlling product acquisition, step **567**; and completing product acquisition, step **568**, as depicted in **FIG. 5G**.

[0160] **FIG. 5H** depicts that tasks **561**(*a*)-**561**(*f*) comprise the planning of subcontractor management in step **561**. In step **561**, project management plans for the project's use of subcontractors including developing criteria to be used for subcontractor selection. The first task in step **561** is to identify the need for a subcontractor, step **561**(*a*). In step **561**(*a*), the organization identifies a need for a subcontractor. Before the need for a subcontractor is determined, the business requirements for the project should be defined. The objective is to describe "what needs to be done and/or achieved" and which development team/s should be instrumental in implementing this requirement. The supporting analysis and research provide input with regard to the requirements, including the current capability analysis, constraint analysis, best practice research, and potential delivery options. If the project team does not have the resources to satisfy these requirements, then a subcontractor should be considered. Again, the organization may use DAR if necessary to evaluate the need for a subcontractor. If a subcontractor is needed, the organization should update the supplier agreement management section of the project plan with a description of the subcontractor arrangement. The organization may then prepare the subcontractor management plan.

[0161] Returning to **FIG. 5H**, the organization's next action during the planning of subcontractor management in step **561** is to define a subcontractor statement of work (SOW), step **561**(*b*). The subcontractor SOW should clearly define the scope and objectives of the subcontract, the process that should be used to manage the subcontractor, and any standard contract clauses. The SOW should also provide as much detail as possible about the planned subcontract, including the contract monitoring process, the quality management process, the configuration management process, and the contract closure process. A proposal/project team is generally responsible for identifying the technical requirements that the subcontractor should satisfy.

[0162] As depicted in **FIG. 5H**, the organization's next action during the planning of subcontractor management in step **561** is to develop subcontractor selection criteria, step **561**(*c*). Prior to assessing subcontractors, the organization should define the selection criteria. Whereas some criteria should be generic, such as quality, service, value, and past performance, there is greater value in defining specific criteria that apply to different categories of assets and services to be procured, especially those criteria concerning longer-term cost considerations. Selection criteria should also reflect defined business needs. To satisfy this step **561**(*c*), the proposal/project team should create the subcontractor selection criteria using the template provided.

[0163] Next, in step **561**(*d*), the organization should develop a subcontract pricing mode. In general, after defining the statement of work, it is necessary to establish the type of contract that will be used for the subcontract. It is important to determine the type of contract early in the process, as it has a fundamental impact on the subcontractor's proposal and economics of the program. This work should be closely coordinated with the development of the contract strategy.

[0164] Returning to **FIG. 5H**, the organization's next action during the planning of subcontractor management in step **561** is to create a subcontractor long list, step **561**(*e*). Using the subcontractor selection criteria template provided, the organization in step **561**(*e*) identifies the long list of subcontractors that will be invited to propose. This list may be based on the following criteria: satisfaction with existing/previous subcontractor work, market share of the subcontractor, industry reputation of the subcontractor, proximity of the subcontractor, availability of the subcontractor, financial status of the subcontractor, etc.

[0165] As depicted in **FIG. 5H** is the prepare/finalize request for proposal (RFP), step **561**(*f*). The RFP should be created in step **561**(*f*) after the need for a subcontractor has been established in step **561**(*a*), the statement of work has been defined in step **561**(*b*), the selection criteria have been established in step **561**(*c*), the pricing model has been established in step **561**(*d*), and the appropriate terms and conditions have been established. The RFP should be finalized with input from all relevant stakeholders.

[0166] As depicted in **FIG. 5G**, the next task in the supplier agreement management in step **560**(*a*) is to organize subcontractor management resources, step **562**. The organization performs step **562** to organize resources associated with subcontract management. In step **562**, the project Work Plan is updated to account for subcontractors. Tasks that will use subcontractor resources are documented. Subcontractor Selection Criteria are finalized and a subcontractor is selected. Turning now to **FIG. 5I**, the organization of subcontractor management resources in step **562** comprises the tasks of developing work breakdown structure (WBS) and a resource-loaded work plan, step **562**(*a*); finalize subcontractor selection criteria, step **562**(*b*); issue a request for proposal (RFP), step **562**(*c*); receiving bids, step **562**(*d*); evaluating bids to select a suitable subcontractor, step **562**(*e*); and negotiating and finalizing a subcontract, step **562**(*f*). It should be noted that steps **562**(*a*)-(*e*) in the flow chart in **FIG. 5I** represent the potential tasks that would be completed to select a subcontractor, but many of these steps may be omitted based on project requirements.

[0167] In the development of the WBS and resource-loaded work plan of step **562**(*a*), the WBS decomposes each business capability into manageable units and depicts the total scope of the solution needed to achieve the program/project objectives. The work plan sets out the major work processes and constituent units of work that will be used to accomplish the project. The resource-loaded work plan then matches available resources with each task in the work plan. Both the WBS and the resource-loaded work plan should document the tasks that will be completed using subcontractor resources.

[0168] In step **562**(*b*), the organization should finalize subcontractor selection criteria, as depicted in **FIG. 5I**. In step **562**(*b*), the organization updates the subcontractor selection criteria established during the plan subcontractor management of step **561** to finalize the criteria that will be used to evaluate subcontractor proposals. Continuing with **FIG. 5I**, during step **562**(*c*), the organization next issues an RFP and distributes the RFP to a list of subcontractors identified for solicitation in step **561**(*e*). The organization then receives bids, step **562**(*d*), to gather proposals from subcontractors.

[0169] The organization should then evaluate the bids and select a suitable subcontractor, step **562**(*e*) in **FIG. 5I**. In particular, as bids are received from subcontractors, the responses should be entered into a subcontractor selection criteria matrix to facilitate the evaluation process. Evaluators should also review the potential risks associated with each subcontractor. Once all responses have been entered into the matrix and all potential risks have been assessed, a selection can be made by the organization.

[0170] The organization should next negotiate and finalize a subcontract, step **562**(*f*) in **FIG. 5I**. After the subcontractor is selected, it may be necessary to make additional negotiations to finalize the contract. As a result of finalizing the subcontract, it may be necessary to update the project plan and/or subcontractor management plan with any new conditions, such as the need to provide project-furnished facilities.

[0171] Returning to **FIG. 5G**, the next step in the subcontractor management in step **560**(*a*) is to control subcontractor management in step **563**. In step **563**, the organization acts during project execution to monitor and control subcontractor activities for subcontractors that do not function as part of the project team. Subcontractors that work as part of the project team follow the processes outlined in the step of control project work in step **530**. In addition, there should be regular status meetings with the subcontractor. During step **563**, the work and work products of subcontractors are monitored through visual observation and/or Subcontractor Status Reports. Corrective action is taken as problems arise.

[0172] Substeps **563**(*a*)-(*b*) of the control subcontractor management in step **563** are depicted in **FIG. 5J**. Specifically, in step **563**(*a*), the organization monitor subcontractor performance: The project manager or designated team member overseeing the subcontractor should observe the subcontractor's performance on a regular basis and manage all communications with the subcontractor. If the subcontractor fails to perform as expected (e.g., late delivery, poor quality, etc.), the organization should act to remedy these failures to minimize their harmful effects on the project.

[0173] Likewise, in step **563**(*b*), the organization should receive subcontractor reports, as illustrated in **FIG. 5J**. The subcontractor should submit all reports to the project team as specified in the subcontract. This may include status reports, turn-around documents, invoices, metrics, etc. These reports should be used to track subcontractor performance against the work plan and schedule milestones and evaluate quality of work.

[0174] Returning to **FIG. 5G**, the final step in subcontractor management in step **560**(*a*) is to complete subcontractor management, step **564**. In step **564**, project management verifies that the subcontractor has completed all tasks outlined in the subcontract and that technical performance requirements are satisfied. If the subcontractor successfully satisfies all contract requirements, both administrative and technical, the contract close out process occurs. If not, project management takes corrective action. Project Management updates the Closing Memo based on subcontractor deliverables and performance as necessary. As depicted in **FIG. 5K**, the tasks in the completion of subcontractor management in step **564** include the determination of whether contract requirements are satisfied, step **564**(*a*); determining if technical performance requirements are sat-

isfied, step **564**(*b*); transitioning responsibilities and work products, step **564**(*c*); and closing contract, step **564**(*d*). In determining if contract requirements are satisfied in step **564**(*a*), the organization assesses whether the subcontractor has failed to satisfy the contractual requirements. The organization further determines if any corrective actions may be needed.

[0175] Continuing with **FIG. 5K**, in determining if technical performance requirements are satisfied in step **564**(*b*), the project manager or designated team member oversees a subcontractor and is responsible for assessing the technical performance of that subcontractor. The acceptance criteria for contractual closeout are documented in the SOW and should be used to evaluate the subcontractor's performance. This assessment may include a review of deliverables, metrics, invoices, etc., submitted by the subcontractor. If the subcontractor fails to satisfy the technical performance requirements of the contract, corrective action may be needed.

[0176] Referring again to **FIG. 5K**, the next task in completing the subcontractor management is the transition of responsibilities and work products, step **564**(*c*): Once the subcontractor has successfully completed all work stated in the contract, it is necessary to transition the responsibilities and work products of the subcontractor to the appropriate party. Step **564**(*c*) may require the subcontractor to train personnel in a given area, hand over system documentation and manuals, etc.

[0177] Then, in step **564**(*d*), the organization may close the contract with the subcontractor, as illustrated in **FIG. 5K**. If the subcontractor successfully satisfies both administrative and technical contract requirements, the contract closeout process can occur. The contract closeout process may include the collection of information, such as performance metrics, from the subcontractor if this requirement was specified in the statement of work, request for proposal, or contract.

[0178] Returning to **FIG. 5G**, the corollary to the subcontractor management of step **560**(*a*) is the product acquisition of step **560**(*b*). The first task in the product acquisition is to plan the product acquisition in step **565**. The organization performs step **565** to plan activities related to product selection and implementation. In step **565**, the project's product needs are identified. The project's detailed approach to product acquisition is outlined in the Product Selection Approach. After determining a need for a product exists, a high-level review of the market is conducted to determine possible vendors and the product selection criteria are developed. It should also be noted that, in some cases, there are outside factors that govern the selection of products. Therefore, the following tasks **565**(*a*)-**565**(*d*) may not always be necessary or inclusive. In addition, these tasks are only necessary when the product will be turned over to the client.

[0179] Turning now to **FIG. 5L**, the first task in the planning of product acquisition in step **565** is to identify a need for a product, step **565**(*a*). In step **565**(*a*), the organization determines if business needs can be satisfied with the implementation of an off-the-shelf product. Step **565**(*a*) may also involve participation from the proposal/project team and the client. The organization may generally follow the guidelines in a DAR Reference document. Specifically, the triggers and thresholds documented in the project plan determine if it is appropriate to use DAR to evaluate the need and/or selection of an off-the-shelf product. The organization may likewise use the project plan to describe the project's need for an off-the-shelf product and to identify the areas in which it may be necessary or desirable to use an off-the-shelf product.

[0180] As depicted in **FIG. 5L**, the next task in the planning product acquisition in step **565** is to develop a product selection approach, step **565**(*b*). In step **565**(*b*), the organization may document the project's detailed approach for product acquisition. Likewise, another task in the product acquisition **560**(*b*) is to survey potential product providers, step **565**(*c*). In step **565**(*c*), the organization may conduct a high-level review of the market to determine potential product providers or contact an alliances group for assistance in identifying providers. The organization may then document potential providers on a vendor long list according to product selection criteria. This step **565**(*c*) may include input from several different sources such as Internet research, participants with past project experience, independent product ratings, etc. In some cases, step **565**(*c*) may not apply as the project sponsor may dictate the specific application to be used.

[0181] Continuing with **FIG. 5L**, the next task in the planning of product acquisition in step **565** is to finalize the list the product providers to be invited to propose, step **565**(*d*). In step **565**(*d*), the organization identifies a list of product providers to be considered based on the information gathered during the survey of potential candidates. The organization may select providers that satisfy most of the project's requirements. In step **565**(*d*), the organization may refer to predetermined product selection criteria with the product providers to be considered.

[0182] Continuing with **FIG. 5G**, the next task in the product acquisition step **560**(*b*) is to organize product acquisition, step **566**. In step **566**, the organization organizes resources associated with product acquisition. Furthermore, the product selection criteria are finalized and vendors are invited to demonstrate their products. At the end of this task, final product selections are made. It should be noted that, in some cases, there are outside factors that govern the selection of products, and, therefore, some or all of steps **565**(*a*)-(*e*), described below in **FIG. 5M**, may be skipped as necessary.

[0183] Turning now to **FIG. 5M**, the individual tasks that comprise the organization of the product acquisition in step **566**. The first task is to finalize product selection criteria, step **566**(*a*). In step **566**(*a*), the organization should develop finalized selection criteria based on the organization's economic needs and goals, such as costs, timeframe, and quality concerns.

[0184] Next, in step **566**(*b*), the organization may define business scenarios, as illustrated in **FIG. 5M**. Using the product selection criteria formed in **FIG. 566**(*a*), the organization may develop business scenarios that may then be used to form a questionnaire. In this way, the business scenarios may be used to evaluate product fit and performance during vendor demonstrations.

[0185] The next task in **FIG. 5M** is to prepare and distribute a request for proposal (RFP), step **566**(*c*). In step **566**(*c*), the organization should develop a RFP that requires

the vendors and providers to propose similar configurations and have all hardware, software, and on-site consulting services (in days) identified and itemized. Providers can also submit their idea of an optimal configuration. Furthermore, the RFP should include as much information about application interaction as possible.

[0186] Returning to **FIG. 5M**, another task in the organization of product acquisition in step **566** is to conduct vendor demonstrations, step **566**(*d*). In step **566**(*d*), each finalist should provide a product demonstration. During the demonstration, the organization should evaluate how well each provider/vendor meets the various business scenarios.

[0187] Next, the organization may compare costs and benefits of product providers, step **566**(*e*), as illustrated in **FIG. 5M**. In particular, the organization may use the product selection criteria to compare the proposals submitted by the product provider finalists. Also evaluate the potential risks associated with each product.

[0188] Continuing with **FIG. 5M**, another step in the organization of the product acquisition is to make a final product selection, step **566**(*f*). The organization may select the product provider based on the final scores in the product selection criteria and an assessment of potential risks. Step **566**(*f*) may also includes the preparation of a purchase agreement or contract. It may also be necessary in step **566**(*f*) to update the project plan to document any new conditions that result from the product acquisition, such as the need to provide project-furnished facilities.

[0189] Returning to **FIG. 5G**, the next step in the product acquisition of step **560**(*b*) is to control product acquisition, step **567**. In step **567**, the selected product is installed, testing is performed, and the performance of the product is evaluated. The organization may perform step **567** after acquiring the product to ensure that the product satisfies business needs and performs as anticipated. It should be noted that these tasks are typically performed only for new products that have not been previously tested and implemented. For products that have been previously implemented, application testing and performance are evaluated during previous product and acceptance testing.

[0190] The substeps in the control of product acquisition in step **567** are depicted in **FIG. 5N**. The first task in controlling product acquisition in step **567** is to install or otherwise use the product in the environment to be used for acceptance and performance testing, step **567**(*a*).

[0191] Next, in step **567**(*b*), the organization conducts application testing, as illustrated in **FIG. 5N**. Specifically, once the product has been delivered, it is preferable in step **567**(*b*) to perform a fit analysis to ensure that the software satisfies the business scenarios as originally intended. The fit analysis should map the product characteristics against both the existing user service class characteristics and the existing underlying components of the delivery vehicles (execution, operations, development, computing platforms, and network architecture).

[0192] Continuing with **FIG. 5N**, the next task in the control of the product acquisition is to evaluate application performance, step **567**(*c*). Three different methods are available to evaluate product performance in step **567**(*c*): comparison, application sizing, and electronic spreadsheet analysis. Comparison analysis may be performed using existing installations of the product with similar environments, operations, and configurations. Some product vendors perform application sizing to determine if the product is adequate for the project needs, but results should be interpreted with caution. Electronic spreadsheet analysis translates business transactions into resource utilization and service times for evaluation. The accuracy of electronic spreadsheet analysis is driven primarily by the knowledge of business functions, transaction rates, and package architecture.

[0193] Returning to **FIG. 5G**, another step in the product acquisition is to complete the product acquisition, step **568**, to close out the product acquisition tasks. In step **568**, project management determines if the contract requirements are satisfied. Once the product has been assessed and meets all performance and functional needs, the product and the job responsibilities associated with the product are transitioned to the appropriate party. At this point, the contract with the vendor is closed. The tasks in the completion of the product acquisition in step **568** are illustrated in **FIG. 5O**. Specifically, the completion of the product acquisition in step **568** comprises the tasks of determining if contract requirements are satisfied, step **568**(*a*); determining if performance issues require contract to be closed step **568**(*b*); transitioning the acquired product, step **568**(*c*); and closing the product acquisition contract, step **568**(*d*). In the determination of whether purchase contract requirements are satisfied during step **568**(*a*), the organization assesses the product against the contract requirements to determine if the agreed upon conditions have been met. Next, in step **568**(*b*), the organization determines whether performance issues require the product purchase contract to be closed. Specifically, the organization decides if the product meets performance requirements. If the product fails to meet performance requirements, it may be necessary to terminate the contract. Contact the alliances group for assistance in identifying a product with better fit or performance.

[0194] Once the product has been assessed and meets all performance and functional needs, it is necessary to transition the product and the job responsibilities associated with the product to the appropriate party. Accordingly, in step **568**(*c*), the organization may transition the product as needed, as illustrated in **FIG. 5O**. Step **568**(*c*) may require the organization to train the appropriate party, handing over system documentation and manuals, etc. Then in step **568**(*d*), the organization may close the purchase contract after verifying that contract requirements have been satisfied.

Delivery Management

[0195] Returning to **FIG. 1**, the next step of the CMM in a BOX method **10** of the present invention is to implement delivery management **600**. Delivery management **600** relates to the activities undertaken to develop a system software application for eventual delivery to clients. The Delivery management step **600** translates the required business outcomes into a business solution. A business solution is the combination of business process, a technology solution and organizational changes that collectively create value by improving business performance. The Delivery Management Module defines a multi-functional approach for taking each business solution from analysis to deployment. As depicted in **FIG. 6A**, the delivery management **600**

encompasses four stages of work: analysis, step **700**; design, step **800**; building and testing, step **900**; and deployment, step **1000**. One of the delivery programs should be mobilized for each business solution to be delivered.

[0196] In analysis stage **700**, the organization accesses and defines the tasks to be accomplished for delivery of the desired products. During stage **700**, business, user and interface requirements are defined as necessary to define and commit to a specific implementation and release plan. The information gathered during stage **700** focuses on business requirements, describing it to the level of detail needed to finalize the delivery releases, define the specific requirements, and resolve implementation issues. As illustrated in **FIG. 7A**, the analysis stage **700** consists of defining a business case, step **710**; gathering and analysis of requirements, step **720**; assessment of the deployment environment, step **730**; and identification and analysis of the application and interface requirements, step **740**.

[0197] The first step in the analysis stage **700** is the defining of a business case, step **710**, which is illustrated in **FIG. 7B**. In step **710**, the organization defines the business case to determine benefits to be derived from, and justification for a proposed business solution. When defining a business case in step **710**, the organization first determines an economic evaluation approach, step **711**. Specifically, the organization performs this task to obtain commitments from the appropriate stakeholders in the sponsoring organization on the overall implementation approach for the proposed solution. This task treats the process of implementing a solution as an investment.

[0198] The organization subsequently creates a model structure, step **712**. During this task, the organization obtains an agreement from the sponsoring organization regarding the structure of the model used to determine the benefits of implementing the proposed solution. For example, benefits to be derived may be expressed in terms of increased market share or reduced operating costs.

[0199] The organization next forecasts baseline business performance, step **713**, to determine how the business should perform without the proposed solution. The next step in the analysis stage **710** is to project net change journey benefits, step **714**, during which the organization attempts to predict and quantify the benefits that the sponsoring organization should derive from implementing the proposed solution. A further step in the analysis stage **710** is to assemble a business case, step **715**. During step **715**, the organization documents a rationale for implementing the proposed solution. Ultimately, this document should serve as a motivational tool for change.

[0200] Turning now to **FIG. 7C**, the next step in the analysis stage **700** is the gathering and analysis of requirements, step **720**. In step **720**, the current business environment is assessed and new requirements for the business and users are defined. During the gathering and analysis of requirements in step **720**, the organization analyzes its current business, step **722**, to obtain an accurate picture of its elements, its operation, and its performance. The organization then identifies user and business requirements, step **724**, to define and document high-level requirements for desired solutions. These requirements include changes to human performance, business process, and technology. The organization should seek to ensure that these requirements meet the needs stated in the proposal, business needs statement, work request, or task order, including interfaces to other systems. During step **724**, project participants impacted-by the requirements should be involved in the review and sign-off of the requirements. Another step in the gathering and analysis of requirements in step **720** is to document the new business environment, step **726**. In step **726**, the organization documents user locations and transaction volumes in any new business environment.

[0201] As illustrated in **FIG. 7D**, the analysis stage **700** continues with the assessment of the deployment environment, step **730**, to ensure that deployment concerns and needs are considered sufficiently early in the development process. The objectives of the task are to consider the geographical, infrastructure, operational, and cultural differences between the current structure of the sponsoring organization and the desired structure, to define the deployment requirements, and to determine the optimal deployment mechanism.

[0202] In the evaluation of the deployment environment in step **730**, the organization assesses its release approach, step **732**, to review the deployment plan, particularly to identify risks and to justify costs for deployment. The organization further identifies deployment requirements, step **734**, to identify deployment requirements for the proposed solution. A key deployment requirement is the production and release of the deliverable product or service. The organization should document the identified deployment requirements within a business requirements document.

[0203] The next step in the analysis stage **700** is the identification and analysis of the application and interface requirements, step **740**. During step **740**, the application and interface requirements are prepared based on the business and user requirements gathered. All agreed-upon requirements gathered to this point are entered in the Requirements Traceability Matrix. Step **740** is generally illustrated in **FIG. 7E** and comprises these steps: transforming business requirements into more detailed application and interface requirements, step **741**; integration of performance support requirements, step **742**; recovering current application and interface design, step **743**; identifying application and interface quality requirements, step **744**; analyzing application and interface requirements, step **745**; and verifying requirements documentation, step **746**.

[0204] During the transforming of business requirements into more detailed application and interface requirements in step **741**, the organization uses the business requirements as a starting point to develop the application requirements. The application requirements should be in the context and scope of the business requirements. Also, these requirements should be verified to help ensure that the business process designs were properly interpreted. Then, in step **742**, the integration of performance support requirements, the organization analyzes the tasks and factors that hinder user performance, taking into account their background and behavior.

[0205] As illustrated in **FIG. 7E**, the next task in the identification and analysis of the application and interface requirements, step **740**, is the recovery of current application and interface design, step **743**. The recovery of current application and interface design in step **743** entails reviewing the current application/interface documentation and

physical structures to gather requirements that may be omitted from the new application/interface. Step **743** includes the documentation of the present logical data structures. The organization should further identify expected requirements that otherwise may be assumed by the business representatives and not considered. Another task in step **743** is to verify that the review also covers interface requirements. In this way, the recovery of current application/interface design in step **743** provides an inventory for conversion and a potential starting point for bottom-up data modeling.

[**0206**] Subsequently, in step **744**, the organization identifies application and interface quality requirements, as illustrated in **FIG. 7E**. During step **744**, the organization seeks to select the quality attributes used to measure the application/interface functional and usability requirements, as these quality attributes should guide the design. Using these requirements, the organization should analyze application and interface requirements, step **745**. Specifically, the organization should perform an analysis of the gathered requirements using process, event, data and content modeling techniques. Similarly, the organization may use validation techniques to confirm requirements such as prototyping and simulations. The organization may also create cases or scenarios to ensure requirements will be operational. The organization may additionally perform risk assessment against the identified requirements. The organization next documents the application and interface requirement specifications using a template. The actual requirements should be documented using a requirements traceability matrix for future tracking against other work products. The organization should make verify requirements are documented in a manner to ensure bidirectional traceability so that it is possible to trace requirements from the requirements development phase to the testing phase and vice versa. In addition, it should be possible to trace requirements across interfaces. In performing step **745**, the organization preferably involves project participants impacted by the requirements in the review and sign-off of the requirements

[**0207**] Returning to **FIG. 7E**, the next step is to verify the documentation of requirements, step **746**. Specifically, the organization should review all requirement documents, such as executive architecture, development architecture, and operational architecture, thereby ensuring that these documents are in sync.

[**0208**] Returning to **FIG. 6A**, the next set of tasks in the delivery management **600** is to design, step **800**. The design stage **800** focuses on designing the components of the technology infrastructure, including the execution/operations and development architectures. In addition, the design of the network, communication and computing platforms is performed in this stage. Design work should be coordinated with the development of the business processes, technical solution and organizational changes required to support the new infrastructure. The design process **800** is comprised of two tasks: designing the technology infrastructure, step **801** and designing the application, step **802**.

[**0209**] **FIG. 8A** illustrates one embodiment of the design of the technology infrastructure in step **801**. One of the tasks in step **801** is to identify and analyze technology infrastructure requirements, step **810**. During step **810**, the organization prepares for the selection and design of the technology infrastructure and establishes preliminary plans for technology infrastructure releases and product testing. Furthermore, technology-related requirements are refined to form the component requirements for the technology infrastructure. For instance, step **810**, the requirements for the technology infrastructure are outlined and preliminary plans for technology infrastructure releases and product testing are established. As this task is performed, technology-related requirements are refined to form the component requirements for the technology infrastructure. Accordingly, a first task in the identification and analysis of technology infrastructure requirements during step **810** is to identify technology infrastructure requirements, step **811**, as illustrated in **FIG. 8B**. The organization performs step **811** to identify the functional, technical, and performance requirements for the technology infrastructure that should support the solution. During step **811**, the organization also identifies key performance indicators, creates baseline estimates of transaction volumes and system size, and sets measurable targets for the performance indicators. Key performance indicators examined during step **811** include resource availability, capacity, throughput, reliability, scalability, and usability.

[**0210**] As indicated in **FIG. 8B**, a second process in the identification and analysis of technology infrastructure requirements in step **810** is to assess the technology infrastructure's current environment, step **812**. In step **812**, the organization assesses the ability of the existing technology infrastructure to support identified technology infrastructure requirements.

[**0211**] As depicted in **FIG. 8B**, the organization subsequently analyzes any potential technology infrastructure requirements, step **813**, to refine the detailed functional, technical, and performance requirements for the technology infrastructure as outlined in the physical and performance models and to cover any additional requirements during the assessment of the current environment. The additional requirements may include user and service level requirements, as well as any requirements for the development architecture or the execution/operations architecture. The organization seeks to analyze and document the requirements for each component of the technology infrastructure and define additional needs. As part of step **813**, the organization also seeks to involve all project participants impacted by the requirements in the review and sign-off of the requirements.

[**0212**] Returning to **FIG. 8B**, other steps in the identification and analysis of technology infrastructure requirements in step **810** are (1) verification that requirements documentation is in sync, step **814**, and (2) performance of risk assessment against the technical requirements, step **815**.

[**0213**] As illustrated in **FIG. 8A**, the next step in the design of the technology infrastructure, step **801**, is the selection and design of execution/operation hardware, step **820**. The organization performs step **820** to create and document high-level design and component design for the execution/operation architecture. Preferably, to prepare for testing of the architectural components, an architecture test plan, conditions, scripts and other needed family are also be created or defined during step **820**.

[**0214**] **FIG. 8C** depicts the individual steps of the selection and design of execution/operation hardware in step **820**. A first step in the selection and design of execution/opera-

tion hardware in step **820** is to identify execution/operation architecture component options, step **821**, so that the organization may create a list of suitable options for selecting and designing execution/operation architecture components that satisfy the technology infrastructure requirements. The organization then selects any reused execution/operation architecture components, step **822**, if the execution architecture should utilize reused components from other projects, so that the organization may create a list of suitable options for selecting and designing those components that satisfy the execution/operation technology infrastructure requirements. The organization may also select packaged execution/operation architecture components, step **823**, if packaged components should be used in the project. The organization may perform step **823** to evaluate packaged products then and to gain the sponsoring organization's approval to continue. If suitable reusable or packaged components cannot be found, the organization may also choose to design custom execution/operation architecture components, step **824**. If custom execution/operation components will be created in the project, the organization may then compare reused or packaged execution/operation solutions against custom-designed alternatives.

[**0215**] Another step in the selection and design of execution hardware **820** is to design and validate the execution/operation architecture, step **825**, to develop a complete design for the execution/operation architecture design after individual components have been selected or designed. The design for execution/operation architecture should also include custom component designs and any reused and packaged execution/operation architecture extension designs.

[**0216**] Another step in the selection and design of execution/operation hardware **820** is to develop an execution/operation architecture test plan, step **826**, after the execution/operation architecture design is understood and documented, including the selection of reused and packaged execution/operation components. The primary goal of step **826** is to document test approaches and plans for the execution/operation architecture at the component and assembly level.

[**0217**] The next step in the design of the technology infrastructure during step **801** is to select and design development architecture, step **830**, as illustrated in **FIGS. 8A and 8D**. The organization may perform this task to create and document the design of the development architecture components and test plans for those components. Specifically, the organization may create a high-level development architecture and component designs. Preferably, to prepare for testing of the architectural components, an architecture test plan, conditions, scripts and other needed family are also be created or defined during step **830**.

[**0218**] **FIG. 8D** illustrates the substeps in the selection and design of development architecture in step **830**. A first substep is to identify development architecture component options, step **831**. In step **831**, the organization may create and document the design of the development architecture components, as well as the test plan for those development architecture components. The organization also finalizes the physical model and selects or designs for development architecture components.

[**0219**] Other tasks in step **830** include the selection of reused development architecture components from the existing technology infrastructure or from external sources, step **832**, and the selection of packaged development architecture components, step **833**, if they should be used in the project. If the organization should use any packaged development architecture components, the organization should determine which pieces of the development architecture to use and to negotiate contracts with vendors. In a preferred implementation of step **833**, the organization also gathers additional information during vendor demonstrations and site visits to evaluate the available packaged development architecture components.

[**0220**] Another substep in the selection and design of development architecture of step **830** is to design custom development architecture components, step **834**, if any custom-designed components are needed. The organization may choose to produce a design for each custom component in order to understand the complexity, effort, and skills required to design and build the components efficiently.

[**0221**] In another embodiment of step **830**, the organization also designs and validates the development architecture, step **835**, to review the development architecture requirements such as interfaces between components, to design custom development architecture components, and to incorporate any reused or packaged components. The organization may also develop a development architecture test plan, step **836**. The organization should develop a test approach and a plan for testing, concurrently with the design and prototyping of the development architecture. Before developing the test approaches and plans for each component and the assembly of the development architecture, the organization should further review the objectives and scope for the component, component acceptance, and assembly test approach as defined in the test strategy.

[**0222**] Returning **FIG. 8A**, a preferred embodiment of the delivery management stage also includes a peer review, step **840**, of the other steps **810-830** undertaken during the process of designing the technology infrastructure, step **800**. In the peer review, the organization verifies the accuracy and completeness of a deliverable product, whether it is a document or code, for any step in the delivery stage **600**. It should be appreciated that, while displayed at this point in the CMM in a BOX method **10**, a peer review **240** may be implemented at any time as necessary to satisfy the requirements of the CMM or CMMI as well as other overriding business concerns.

[**0223**] Referring to **FIG. 8E**, the organization implements the peer review by first preparing for the review, step **842**. Specifically, the project manager and team leader should budget time to conduct peer reviews and to establish peer review standards and criteria. Also, the owner of the deliverable product should identify and contact any peer review participants, schedule the peer review session, and distribute materials and standards to the reviewers. The reviewers should then prepare for the review by reading the materials prior to the peer review session and documenting comments and recommendations. Where appropriate, a peer review checklist may be used when conducting the peer review.

[**0224**] Continuing with **FIG. 8E**, the next step in the peer review **840** is to conduct the peer review, step **844**. During the peer review session in step **844**, the deliverable owner should document any defects, issues, risks, and action items. The deliverable owner should also record meeting minutes

and the time spent on the review. The reviewers are generally responsible for facilitating the discussion, sharing comments and recommendations with the deliverable owner, confirming that all issues are documented, providing metrics data, and scheduling a follow-up session if necessary.

[0225] Next, in step **846**, the organization should perform any necessary rework of the product, as depicted in **FIG. 8E**. During the rework in step **846**, the deliverable owner implements the actions recommended by the reviewers, collects metrics data (including time spent preparing for review, number of defects found, etc.), and monitors the status of defects, issues, risks, and action items. As necessary, the peer reviewer should also verify that all pertinent items have been closed.

[0226] The organization should then analyze the review results, step **848** as depicted in **FIG. 8E**. The team leader submits the peer review metrics to the project manager for review. The project manager is then generally responsible for analyzing the metrics, evaluating the execution of the peer review process, and identifying areas for process improvement or corrective action with the peer review process.

[0227] Returning to **FIG. 6A**, the next step in the delivery management, in step **600**, is to design an application, step **802**. As illustrated in **FIG. 8F**, during the design of the application in step **802**, the organization designs an application architecture, step **850**, to develop and document the conceptual and general design of the application and designs a database, step **860**, to transform the data model into logical and physical designs of the application's database, while ensuring that data requirements should be met, and that data should be available through a conversion process. The design of the application in step **802** also entails planning a testing approach, step **870**, for developing a comprehensive testing approach that should be used at all levels of testing, including component, assembly, product, user acceptance testing, and production readiness, i.e., deployment testing. Then, in step **880**, the organization designs a performance support approach to determine existing workforce training needs, as well as to design methods and standards for performance support products to meet those workforce training needs.

[0228] During the design of the application architecture in step **850**, the organization seeks to develop and document the conceptual, general, and interface designs of the application. Preferably, to prepare for testing of the architectural components, an architecture test plan, conditions, scripts and other needed family are also be created or defined. As illustrated in **FIG. 8G**, the first step in the design of the application architecture in step **850** is to define the conceptual design, step **851**. Specifically, the organization should document the operational concept for the solution in the conceptual design document. This documentation should outline the functional architecture of the proposed solution.

[0229] Continuing with **FIG. 8G**, the organization should next determine whether to buy or build components, step **852**, by reviewing the conceptual design and assessing factors such as historical information, corporate strategy, support infrastructure, product availability, deadlines, and criticality of requirements. At this point, the organization should define an application architecture, step **853**. When defining the application architecture in step **853**, the organization should determine an approach for conducting design, such as calling group meetings for creating a conceptual approach. The organization should then evolve the conceptual design into a more detailed design as necessary for implementation with application. While evolving the design, key design decisions may trigger the need for a DAR, as described above.

[0230] Continuing with the design of the application architecture in step **850**, as depicted in **FIG. 8G**, the organization next undertakes the concurrent tasks of defining a process flow in step **854**, designing application interfaces in step **855**, and planning an assembly test in step **856**. In defining a processing flow in step **854**, the organization identifies all programs in the application, identifies their sequence, decomposes the programs into modules, and identifies how the modules communicate. The aim of step **854** is to develop enough detail to estimate the application's costs, resource consumption, and response times.

[0231] At the same time, the organization designs application interfaces, step **855**. Specifically, the organization designs the automated interfaces between the application being built and other applications with which it should communicate. During step **855**, the organization also preferably develops an interface agreement and interface design to outline the expectations of the parties developing the various components. These documents should describe the handling of change requests, data exchange and control, backup and recovery requirements, error handling procedures, and provide escalation procedures in the event of a conflict.

[0232] At the same time, the organization also plans assembly tests, step **856**, by developing an approach and a plan that should be used to organize and execute assembly tests. The objective of assembly testing is to ensure that related components function properly when assembled into dialogs or batch strings and to verify that the component interfaces have appropriately implemented the design.

[0233] As illustrated in **FIG. 8F**, the next step in the application design **802** is to design a database, step **860**. When designing a database in step **860**, the organization transforms the data model into logical and physical designs of the application's database, acts to ensure that all data requirements should be met, and that all data should be available through the conversion process. The steps in the database design **860** are illustrated in **FIG. 8H**. The first step in the database design **860** is to design a logical database, step **862**. The organization may perform this task to transform the data model into the logical data structures using known database techniques. If the design of the logical database in step **862** produces a relational database, the logical database includes tables that contains various data used to define the database such as columns, primary keys, and row lengths; codes tables; foreign keys; integrity rules; views; and denormalization of the statistical data contained in the database. The logical data model is typically delivered to a client in soft copy format using data modeling tools.

[0234] Next, the organization designs a physical database, step **864**, by selecting or preparing physical storage and access structures for the application's data and by transforming the logical database design into storage and access structures that can be physically implemented. The physical database produced in step **864** generally includes database

definitions, database space worksheets, database mappings, relational index definitions, and table space definitions. The database design **860** continues with designing data conversion processes, step **866**, such that the required conversion programs and procedures ensure the availability of data required by the application in production. In this step, the organization should produce an approach for converting and mapping documents.

[0235] Returning to **FIG. 8F**, the design of the application in step **802** continues with the development of a planning testing approach, step **870**. This planning testing approach should be used at multiple levels of testing such as component, assembly, product, and user acceptance testing, and deployment testing. As illustrated in **FIG. 8I**, the first step in the development of a planning testing approach in step **870** is to develop an overall testing approach by refining and documenting an overall approach for testing, step **872**. In developing the overall test approach, the organization should plan for the testing of interfaces. The overall test approach produced in step **872** should include details on sequence testing and the testing environment and also preferably includes the documentation of the resulting detailed testing procedures. The next two steps in producing a testing approach in step **870** are (1) to identify product test conditions, step **874**, where the conditions are used to verify that solutions meets the requirements for the components being created; and (2) to develop product test cycles, step **876**.

[0236] Returning to **FIG. 8F**, the next step in the application design **802** is to design a performance support approach, step **880**, to determine existing workforce training needs, as well as to design methods and standards for performance support products to meet these workforce training needs. In step **880**, the organization also designs performance support test and evaluation approaches and completes a validation of the complete test and evaluation approach. With reference to **FIG. 8J**, the first step in the design of a performance support approach is to determine performance support needs, step **881**, to determine the workforce's current proficiency and performance levels. This information is used to assess the gaps between current and expected proficiency and performance levels, which, in turn, drive the design of the performance support approach. Next, the organization designs learning objectives and a curriculum plan necessary to close the proficiency and performance gaps in the organization's workforce, step **882**. Another step of the design of a performance support approach is to design performance support products, step **883**, to define the delivery methods and standards for performance support. These delivery methods may include instructor-led training, performance simulation, computer-based training, videos, workshops, job aids, on-line quick reference tools, and training databases.

[0237] As illustrated in **FIG. 8J**, the next step is to design a comprehensive approach for testing the performance support products with respect to achieving each product's learning objectives, step **884**. In step **884**, the organization generally defines an approach that includes the scope and objectives of the test, environment requirements, entry/exit criteria, metrics, and schedule. The organization then designs a comprehensive approach for evaluating the effect of the performance support products on the employees' competency proficiency levels and performance levels in specific areas, step **885**. Any designed approach for performance support evaluation should include evaluation methods, proficiency metrics, and schedules. The design of the performance support approach in step **880** may also include the verification and validation of the performance support approach and the curriculum plan with stakeholders and subject matter experts, step **886**. The organization should also organize labor review sessions to determine how well the sessions fit together to support the training needs of the workforce.

[0238] As illustrated in **FIG. 6A** the next step in the delivery management **600** is to build and test, step **900**. The build and test step **900** concentrates on implementing the business solution elements required for a single release. The delivering teams are responsible for the detailed design and creation of new processes, facilities, learning systems, performance support, application systems and technology infrastructure necessary to implement the new solution. These elements are then tested and implemented within a pilot environment. Thus, the building and testing in step **900** is accomplished through building and testing the technology infrastructure in step **901**, building and testing the application in step **902**, and planning executing product and acceptance tests in step **903**.

[0239] **FIG. 9A** presents the elements in the building and testing of the technology infrastructure in step **901**. Step **901** focuses on acquiring, developing and testing the technology infrastructure. During step **901**, additions and extensions to the execution/operations and development architectures are implemented, physical network and computing resources are developed, and a unified product is tested prior to the application product test. The first task in step **901** is to acquire physical environment assets and services, step **905**. Generally, these physical environment assets and services are deployed to enable the implementation of the requirements based on the previously defined details of the physical environment assets. For instance, the organization may apply the data obtained in step **420**. The organization uses the listing of physical environment assets and services to decide who should supply the assets and services, how the assets and services should be supplied, and how much the assets and services may cost.

[0240] As depicted in **FIG. 9B**, the first step for acquiring physical environment assets and services is to initiate the acquisition of physical environment assets and services by selecting and appointing providers of assets and services, step **906**. For instance, the organization preferably identifies those contracts that need to be negotiated on an expedited basis and ensures that due diligence is applied to the context and content of all contractual arrangements. The organization then selects and appoints assets and services vendors, step **907**, to appoint third-party suppliers and contractors who may provide assets, such as property and equipment, and technical/build/transfer/install/maintenance services for deployment of the physical environment, or services relating to decommissioning and disposal of the existing physical environment.

[0241] Again, the organizations should prioritize those early purchase requirements that need to be expedited on a "fast track" basis. Subsequently, the organization should evaluate the deployment implications of the vendor appointments, step **908**, to analyze the impact and deployment implications of appointing specific providers, either external

or internal. These impacts may involve additions or revisions to project documents such as deployment plans, Business Case, project plan, and all subordinate plans.

[0242] Returning to **FIG. 9A**, the next step in the building and testing of the technology infrastructure, step **901**, is to build and test the execution/operation architecture, step **910**, in order to complete a detailed design of the execution/operation architecture and to build and test that architecture. The organization may use the same methodology for application and operation development, as provided above in step **820**, to plan and perform the component tests of the execution/operation architecture. As illustrated in **FIG. 9C**, the first step in the building and testing of the execution/operation architecture is to develop program specifications for each custom component of the execution architecture and to determine software configurations for each packaged or reusable component of that architecture, step **911**. The organization may use the resulting detailed design to build custom components and to install packaged or reusable components. This task may also include updating the technology infrastructure component test plans, conducting reviews of the resulting detailed designs, and preparing common test data.

[0243] The organization next builds any custom execution/operation architecture components needed for the project, step **912**. This step **912** may also include documenting development procedures and standards, and conducting code reviews. The organization then prepares and executes a component test of the execution/operation architecture components, step **913**, to verify that the execution/operation architecture components are built according to proper designs. During step **913**, any detected errors should be documented, and all of the execution architecture components should be relatively free of errors and ready for a subsequent assembly test.

[0244] As depicted in **FIG. 9D**, the organization should similarly build and test the development architecture, step **915**. The first task in step **915** is to perform a detailed design of the development architecture, step **916**. In step **916**, the organization develops program specifications for each custom component of the development architecture and to determine software configurations for each packaged or reused component of that architecture. Step **916** also preferably includes updating the technology infrastructure component test plans, conducting reviews of the resulting detailed designs, and preparing common test data. The organization should then build any needed custom development architecture components, step **917**. Step **917** may also include documenting development procedures and standards, and conducting code reviews. The organization then prepares and executes a component test of the development architecture components, step **918**, to verify that the development architecture custom components are built according to their designs. During step **918**, the detected errors should be documented, and all of the development architecture custom components should be relatively free of errors and ready for the assembly test.

[0245] As depicted in **FIG. 6A**, the build and test stage **900** also includes the building and testing of the application in step **902**. Step **902** focuses on building and testing the application, creating training materials and other forms of performance support required by the business solution. During step **902**, the detailed design, component testing and assembly testing of the application are completed. Learning products and business policies and procedures are developed to train and guide the users of the application. **FIG. 9E** illustrates the steps involved in the process to build and test the application, step **902**. The first of these tasks is deployment planning, step **930**, to produce deliverables that should be needed to test the application and interfaces in an operations environment prior to deployment and to run the application and interfaces after deployment has occurred.

[0246] Turning to **FIG. 9F**, the first task in the deployment planning during step **930** is to develop a deployment approach to document the specifics of the major deployment activities, step **931**. The documentation should include items such as Data Conversion, Policy & Procedure Deployment, Risk Mitigation, Deployment Strategy, and workforce transition also should be covered in this document. The organization should next develop appropriate operating policies to produce a document outlining specific policies in the new operation environment, step **932**. Responsibilities, system availability, and security should be documented in step **932**, and upon completion of the project, this documentation should be given to the client. In a concurrent task, step **933**, the organization may develop operating procedures by producing a document outlining the procedures that need to be followed during on-going support and operation of the installed application. Other subsequent tasks are to develop the operating organization to document the long-term organizational requirements that should be needed in the new operation environment, step **934**, and to develop a disaster recovery plan that outlines an overall disaster recovery approach, as well as specific steps to follow during the disaster recovery process, step **935**. The organization may then prepare the deployment test by creating a deployment test plan, test conditions, test scripts, and test data, step **936**. This plan should be executed prior to delivery of a product to clients. Another step is to package operating manuals, so that the manuals may be turned over to client at completion of the project, step **937**.

[0247] The next step **940**, the performing of application detailed design, is illustrated in **FIG. 9G**, and generally comprises a process to produce completed detailed design specifications that can be directly implemented in code, and a process to develop the approach and plan for component testing the application's modules. The first substep is to design and specify modules, step **941**. Step **941** includes the production of a detailed design of the application and interfaces based on the general design and the application/interface requirements specification. During step **941**, the organization should continue use of the chosen design methods to complete detailed designs. The organization should also prepare a detailed design of the application by specifying all of the modules and their associated call patterns to the lowest level of detail. The detailed design of the application should also include describing each module's purpose and processing logic, developing database access patterns, and identifying other input/output operations. The organization should also be sure to address interfaces during the design process. In step **941**, the organization should also update the interface agreement created during the design stage **600** to reflect any changes associated with the interfaces. The next task in performing a detailed design of the application in step **940** is to plan component testing, step **942**, to verify the correctness of implementation of each of

the application modules with respect to the application detailed design specifications. Step **942** includes determining common test data requirements and using the requirements to create common test data that can be used in the different stages of testing.

[**0248**] As illustrated in **FIG. 9H**, the next step in the build and test stage **900** is to build and test the application, step **945**. In step **945**, the organization builds a complete, high-quality software application from the detailed design of the application. The organization may have developers implement the modules and then review the coded modules to verify correctness. The organization may also execute assembly tests to check interfaces and interdependencies between modules. One task in the building and testing of the application is the coding of modules, step **946**, to create the code of each of the modules according to the previously created detailed application design specifications. Once the code is generated, the organization should check and compile the code as necessary for the project to identify and fix all errors, and to ensure that developers have followed any detailed coding procedures outlined in the project developer's guide.

[**0249**] Continuing with **FIG. 9H**, the goal of the next step, the preparation and execution of the component tests in step **947**, is to execute module code and verify that the module specification was correctly translated to the code. The module code should be verified using the component test conditions from the component test plan to prepare the test data and test scripts for the component tests. The organization should document and fix all detected errors before proceeding. The organization may then prepare and execute assembly tests, step **948**, as needed to integrate modules and verify that their interfaces and interdependencies are correctly designed and implemented. In step **948**, the organization should use the assembly test conditions from the previously prepared assembly test plan to prepare test data and test scripts for the assembly tests. All detected errors should be fixed before proceeding. The next step, the development of a support program in step **949**, involves coordinating and controlling the efforts of the development teams by supporting the programming and testing effort through supervision, control, and coordination. The organization may manage the programming and testing schedule, and monitor progress and report status, via the project management task packages outlined in the document repository policy defined in earlier steps.

[**0250**] As depicted in **FIG. 9I**, at this point in the build and test stage **900**, the organization may develop a finalized, detailed set of policies and procedures, step **950**. The business policies and procedures consist of rules governing work within the organization (policies) and the workflow for executing these rules (procedures). A first task in step **950** is to perform a detailed design of policies and procedures, step **952**. In step **952**, the organization should (1) define the product structure and design and (2) create and develop prototype templates for all policies and procedures. The organization should then develop business policies and procedures, step **954**, by drafting a complete set of business policies and procedures to support the pending product release. In step **954**, the business policies describe the business rules governing workflows and drive the development of business procedures and user procedures documentation. Similarly, the business procedures describe the sequential sets of tasks (and related resources, metrics, etc.) to follow based on the business policies. The organization should next validate and test these policies and procedures, step **956**, to ensure that the Business Policies and Procedures meet the content of the requirements and can be executed by use of the applicable application. In step **956**, the organization should further verify that the information collected is complete and accurately describes the processes.

[**0251**] Turning to **FIG. 9J**, the next task in the building and testing of an application in step **900** is to develop learning products, step **960**. In step **960**, the organization selects the relevant authoring and development tools and to define standards, templates, and development procedures. Step **960** further includes the defining of detailed learning objectives, determining learning context, and designing learning activities. The organization should also review paper-based learning product prototypes for ease of use. Also, the organization should develop activities and content, and define the support learners should require, and develop learning program evaluation materials for during-delivery and post-delivery evaluation of the learning process. Thus, in step **960**, the organization should prepare and execute testing to ensure each learning product meets the stated objectives and instructors are effective when using the learning products.

[**0252**] As depicted in **FIG. 9J**, one task in the development of learning products in step **960** is to define learning product standards and a development environment, step **961**, after the scope of the learning program has been defined and the learning requirements have been identified. In step **961**, the organization should further select authoring and development tools and define the standards, templates, and procedures for the learning products. Development environments typically include Word or PowerPoint-based instructor-led materials or computer-based applications, but can also be made more robust with the use of job aids, a training database, on-line quick reference tools, and videos.

[**0253**] Returning to **FIG. 9J**, concurrent steps in the developing of learning products in step **960** are (1) performing a detailed design of a learning program, step **962**, to specify how each learning product identified in the learning product design should be built to meet the business needs of the organization and (2) prototyping learning products, step **963**, to complete low-fidelity prototypes and conduct ease-of-use sessions on learning components (e.g., activities, support system, and instructor guide) of classroom-based learning products.

[**0254**] In addition, the organization may create learning and evaluation products, step **964**, to develop the learning materials proposed and prototyped during the learning design activities. The creation of learning and evaluation products in step **964** involves the developing of activities, content, and support materials that the learner will require to complete the learning product. Furthermore, evaluation tools are also preferably created in step **964** to ensure that learners have met the learning objectives. Another possible task in the development of learning products in step **960** is the testing of learning products, step **965**, which is best implemented after documenting participant profile, sample size, learning testing methods, test cycles, expected results, and script outlines. The goal is to test each learning product with the intended audience to ensure that the product meets

the stated learning objectives, that the instructors are effective, and that the learning product meets the overall learning objectives for the release. The organization may also package the learning products, step **966**, so that the learning products may be handed over to an appropriate stakeholder at the end of the project.

[**0255**] At this point, the organization may plan and execute the product test and acceptance test, step **903**, as illustrated in **FIGS. 6 and 9**K. Product tests evaluate whether the product is properly functioning, whereas acceptance tests evaluate whether the product functions as desired by customers. Step **903** focuses on performing a product test and user acceptance test on the new application to verify the application components and related technology, processes, and procedures work together properly according to the application and interface requirements. The first task in step **903** is to prepare and execute a product test plan, step **970**, following the creation of the product test plan, conditions, scripts, and data that are used to execute the product test. The planning and execution of the product test plan in step **970** should not begin until all requirements are finalized, the assembly test has been successfully completed, and the testing approach has been finished.

[**0256**] As illustrated in **FIG. 9L**, to prepare and execute a product test, the organization should prepare a product test plan, step **971**, to design and create the test conditions, test scripts, and test data for product testing. The organization should then review its product test plan, step **972**, to verify that the product test plan created in step **971** is complete and accurate prior to product test execution. The resulting benefit to this check is that errors are caught early in the test process, where they can be addressed with minimal effort, rather than during test execution, where correction of errors becomes more costly. The organization should also create, cleanse, and convert data, step **973**, to prepare the data for product test execution. If needed, the organization may confirm the product test environment, step **974**, to verify that the product test environment is ready for application product test execution by confirming that associated items are transferred to the test environment and that the identified configuration is complete and accurate. In this way, in step **974**, the organization verifies that any tools needed for managing and executing the product test (for example, scripting tools and test data management tools) are installed and fully operational. This step **974** also helps ensure that the test data is properly copied and identifies responsibility and authority levels for managing code migration into the product test environment.

[**0257**] Continuing with **FIG. 9L**, following confirmation of the test, the organization may execute the product test, step **975**, to verify that the new application can work with the related technology, processes, and procedures to support the business processes successfully. The product test should prove: (1) that the new application and interfaces perform according to the application/interface requirements established in prior steps, and (2) that the application can operate effectively in concert with all other production applications and all available end-user manuals and procedures.

[**0258**] If any problems arise during the testing, the organization may perform product test fixes, step **976**, to analyze and resolve all problems identified during product test execution as illustrated in **FIG. 9L**. Typically, the organization assigns each problem to a specific team member for correction. After a problem is fixed, the organization may reexecute the test condition to verify that the fix was successful, and perform a regression test to ensure other components were not adversely affected by the fix. Once all errors have been resolved the product test can be considered complete.

[**0259**] Returning to **FIG. 9K**, the organization may next prepare and execute acceptance tests, step **980**. The organization performs step **980** to create the test plan, test conditions, test scripts, and test data for user acceptance testing. The user acceptance test (UAT) also validates that the solution supports the business performance model and should not begin until successful completion of the product test in step **970**. The UAT verifies that the solution works according to the requirements and meets the business objectives. As depicted in **FIG. 9M**, steps **981-986**, the preparation and execution of the acceptance tests during step **980** are very similar to steps **971-976**. For instance, the initial step of the preparation and execution of the acceptance tests in step **980** is to prepare a user acceptance test plan, step **981**, including plans for testing interfaces and the application. The organization then reviews the user acceptance test plan, step **982**, to ensure that the user acceptance test plan is complete. The next step is to create, cleanse, and convert data, step **983**, as needed, to prepare the data required for the acceptance testing, including producing new data, converting existing data, and reconciling different data representations and different database schema representations. If necessary, the organizations may also confirm user acceptance of the test environment, step **984**, to ensure: (1) that the user acceptance test environment is ready for test execution by checking that all necessary items are transferred to the test environment, (2) that the identified configuration is complete and accurate, and (3) that any tools required during the acceptance test are installed and fully operational.

[**0260**] At this point the organization executes the user acceptance test, step **985**, to test the interaction between the components of the solution to verify and validate that they support the model. This acceptance test helps to ensure that the solution works according to the requirements and meets the business objectives. If any problems arise in the test, the organization may resolve user acceptance test issues, step **986**. Specifically, the organization may utilize the user acceptance test issues to analyze all problems identified by the user acceptance test execution through investigating each problem, and assigning it to the appropriate development team for correction. After a problem is fixed, the organization should reexecute the test condition to verify the fix was successful. The organization may also perform a regression test to ensure other components were not adversely affected by the fix. Once all errors have been resolved in step **986**, the acceptance test may be considered complete.

[**0261**] Once solutions to a problem have been analyzed in step **700**, designed in step **800**, and built and tested in step **900**, an organization may deploy the complete solution, as depicted in **FIG. 10A**. The deployment stage **1000** is conducted to transition the organization to the new business solution. The deployment stage **1000** includes the activities required to transform the personnel, business process, and technology elements required to establish the business solution. The deployment stage is repeated for each deployment

site, which is the organizational or geographic unit that will receive the business solution. The first step in the deployment is to transition users and to deploy policies and procedures, step **1010**, to evaluate the existing workforce of an organization in terms of roles and skills, and perform a gap analysis against the new organization infrastructure for the deployment unit, as illustrated in **FIG. 10B**. In step **1010**, the organization may finalize the workforce infrastructure, step **1011**, to mobilize the people who should eventually use the solution. At the same time, the organization should examine the organizational structure, as well as the skills and roles of the existing workforce, to determine if the resources needed to support the solution exist. If needed roles or skills are missing, another task in step **1011** is to develop a plan to address the gaps. This task should be performed before selecting, hiring, or assigning people to teams.

[**0262**] As illustrated in **FIG. 10B**, the next task is to redeploy the workforce, step **1012**, to transfer existing users into the different roles, teams, or functional areas needed to support the solution. Concurrently, the organization recruits and selects a workforce, step **1013**, after developing a profile of the combination of skills and other characteristics necessary to support the solution and using the resulting profile to select internal individuals and to hire external individuals who can fill the necessary roles and teams. The organization then trains the trainers, step **1014**, by preparing the instructors and coaches who should eventually train the workforce to use the solution. Step **1014** generally entails conducting practice sessions of the course in order to allow instructors to rehearse their delivery with course developers as the audience. Next, the organization implements orientation and training, step **1015**. Specifically, the organization introduces employees to the solution that should be deployed. To maximize the benefits of training in step **1015**, the instructors should be trained in step **1014** prior to the training of the workforce. The organization may further give users information on the context of the solution within the organization and train them on how to operate the solution. Furthermore, the organization preferably identifies individual and team development needs, and workers should provide feedback on the learning program in order to improve the process for future releases. Step **1015** should be performed after selecting and recruiting individuals to fill the roles and teams, and after developing the training materials and job aids.

[**0263**] Concurrent with above-described steps **1011-1015**, if needed in response to the deployment, the organization may install the new business policies and procedures, step **1016**. In step **1016**, the organization also acts to en sure that all pieces of the new business policies and procedures are available.

[**0264**] The next step of deployment stage **1000** is to deploy the physical environment, step **1020**, as illustrated in **FIG. 10C**. In step **1020**, the organization manages the implementation of changes to facilities, equipment, and other physical assets. Upon completion of step **1020**, a formal exchange of the transformed physical environment from the project team to the sponsor's operating management may occur.

[**0265**] Continuing with **FIG. 10C**, one task in deploying physical environment in step **1020** is to initiate physical environment deployment, step **1022**, to mobilize the internal and external resources to prepare the physical environment for the solution that should be deployed, and to establish the necessary communication channels. One aspect of step **1022** is to verify that all of the involved parties understand what work for which they are responsible, when this work is scheduled, and how this work is interdependent with the tasks assigned to others. Other tasks in step **1022** may include defining how to monitor, expedite, and report progress. The organization may optionally determine how to maintain quality control and how to regularly communicate progress with stakeholders. Also, step **1022** may include planning for formal progress and quality control reviews.

[**0266**] Returning to **FIG. 10C**, the next step in the deployment of the physical environment during step **1020** to is to manage physical environment transformation, step **1024**, to carry out the development and configuration of the physical environment needed to support the solution. The management of physical environment transformation in step **1024** includes expediting progress, managing issues and risks that may impact the implementation plan, and providing management with summary progress reports.

[**0267**] Continuing with **FIG. 10C**, another the next step in the deployment of the physical environment during step **1020** is to complete a physical environment handover, step **1026**. During **1026**, the organization acts to ensure that the development and configuration of the physical environments are complete, and are transferred to, and accepted by, the sponsoring organization's operations management. Step **1026** generally occurs when both the stakeholders and the deployment project management team are satisfied that the implementation has been completed successfully.

[**0268**] As depicted in **FIG. 10D**, the next task is to deploy the application, step **1030**, to transition the new application and its operating environment into the deployment unit. During step **1030**, the organization may establish the data required by the new application; configure the operating environment to the needs of the deployment unit; install the application; configure application parameters needed for the deployment unit; and verify that the application is correct and consistent for the deployment. Tasks in step **1030** may include the creation, cleansing, and conversion of data, step **1032**, as needed, to establish the data to be used with the new application. During step **1032**, an organization may produce new data and reconcile different data representations and different database schema representations. The organization may also convert an existing electronic representation of data into a format to be used by the new application or use a data conversion application to convert data from an existing database to the new database.

[**0269**] As depicted in **FIG. 10D**, a concurrent task is to configure the application, step **1034** in order to configure and customize the new application and the existing operating environment to the needs of the deployment unit. Next, the organization installs the application, step **1036**. Specifically, the organization may, during step **1036**, install and customize the application components of the business capability in the deployment unit, making sure that all pieces of the new application are available. Another task in the deployment of the application during step **1030** is to verify application, step **1038**, by installing and customizing the new application components of the business capability in the deployment unit, making sure that all pieces of the new application are available.

[0270] As illustrated in **FIG. 10E**, another step in the deployment stage **1000** is to deploy the technology infrastructure, step **1040**. During step **1040**, the organization preferably outlines of the procedures and considerations for deploying technology infrastructure components at a deployment unit. Likewise, the organization should address the potential differences in technology infrastructure environments between deployment units. The goal of step **1040** is to bring the deployment unit up to the technology infrastructure baseline required for the business capability. Deployment of the technology infrastructure in step **1040** may also include the commissioning and decommissioning of infrastructure components. To deploy the technology infrastructure in step **1040**, the organization may also configure the technology infrastructure, step **1042**, to customize the deployment unit's technology infrastructure in preparation for the new business capability components. Step **1042** generally does not handle the configurations that are part of the installation of any new technology infrastructure elements. Next, the organization installs the technology infrastructure, step **1044**, to install the technology infrastructure components of the business capability. The organization should also verify the available technology infrastructure, step **1046**, so that whenever a technology infrastructure component is added or modified, the organization performs this task to verify the new technology infrastructure environment and addresses the discoveries of the testing. This verification in step **1046** is generally completed only for the technology infrastructure.

[0271] The next task in the deployment stage **1000** is to activate and test a solution, step **1050**, to verify the deployment and launch the new operating management processes. Step **1050** generally includes actions required to finalize performance targets, to remove redundant legacy elements, and to stabilize the deployment unit for transition to operations management. One task in the step **1050** is to verify workforce and business readiness, step **1051**, after successful completion of the acceptance test and after all elements have been deployed, but before the business capability is activated. Step **1051** includes execution of the deployment test and verifies that the workforce and the other elements of the business are prepared for operation on the first day and all subsequent days. The organization may use the SIRs or CRs to record any errors encountered.

[0272] A concurrent task is to verify team and process readiness, step **1052**, after all elements have been deployed, but before the business capability is activated. Step **1052** verifies that the deployment team and the deployment processes are prepared to activate the new business capability. Organizations may also activate and verify the deployment, step **1053**, to activate and verify the capabilities that have been deployed. In step **1053**, any of the organization's various teams should have the confidence and ability needed to proceed with irreversible decisions, such as the removal of legacy systems and procedures. The organization should now begin to operate the deployed business capabilities.

[0273] Next, the organization may remove legacy elements, step **1054**, to remove the legacy systems from old operations and management processes after making the irreversible decision to proceed with the new business solution. Concurrent with step **1054**, the organization should finalize performance targets, step **1055** to formalize the baseline for continuous improvement of the business solution. The finalizing of performance targets is initiated as soon as the business solution has been operating long enough to collect reliable data for adjusting the business performance model.

[0274] In another step, the organization may deploy stabilization, step **1056**, to prepare the transition of business capabilities to operations management. The organization should also monitor the progress over a period of time to verify the stability of the team using the deployed business capabilities. A decision that the product is ready to release is reached by analyzing the actual performance and productivity forecasts of the team using the deployed business capabilities.

[0275] Turning now to **FIG. 6B**, maintenance, step **610**, is the continuing support of an application, addressing both production problem resolution (through SIRs) and application enhancements (through CRs). The first task in the maintenance is to review the SIRs or CRs, step **611**. With a SIR, repair work needs to be completed immediately, whereas a CR may be incorporated into a subsequent release of the application. The organization may also review incident or change requests for risk as well. Another step in the maintenance **610** is to perform an impact assessment, step **612**. Specific activities in step **612** include investigating the SIR; determining the change required to address the identified problems to resolve the SIR; determining the effort involved; developing alternatives; and selecting the acceptable alternative. Any affected work products altered by the SIR such as requirements, designs, work plans, code, etc., should be updated as necessary. If it is determined that no application change is needed, the system should be retested to ensure that the problem no longer exists or that the problem should be forwarded to the appropriate channels.

[0276] Another task in the maintenance **610** is to design application changes, step **613**, to create the application design that is needed to build the solution. The organization may also build and test application changes, step **614**, to perform the work necessary to implement the desired change. Once the change has been completed, the change should be component tested and product tested to ensure that it is working properly. Additionally, a regression test should be performed in step **614** to help ensure that other peripheral functions were not affected by the change. Next, the organization may roll out changes, step **615**, as needed to implement the designed, developed, tested changes into the production environment.

[0277] For CRs corresponding with desired enhancements to the product, the organization may also follow the program delivery life cycle, step **616**: For changes (CRs) that can be incorporated into a scheduled release, the detailed work involved in modifying the existing application is performed according to the task packages/tasks in the delivering phase **600**, including the analysis, design, build and test, and deployment steps **700**, **800**, **900** and **1000**. In this way enhancement that extend beyond the original scope of the product are developed much like a new product.

System

[0278] Those skilled in the art of process engineering will recognize that various embodiments of the CMM in a BOX method **10** described above may be implemented in various ways. For instance, the organization may use a set of written templates directing the implementation of the tasks in the CMM in a BOX method **10**.

[0279] In one implementation, the present invention may be implemented as a computer application that prompts an organization for various inputs regarding its operation and structure. Using these inputs, the application then creates a series of task lists to implement the CMM in a BOX method **10** of the present invention. The application may further create a record of task lists, so that the organization may easily document its actions as required in the CMM and CMMI. Alternatively, the program may provide templates through which the organization may document its activities.

[0280] In particular, those skilled in the art will recognize that various embodiments of the CMM in a BOX method **10** described above may be implemented using a combination of both electronic hardware and software. Referring to **FIG. 11A**, a CMM implementation system **1100** receives user input **1130** and produces a business organization plan **1140** based on the user input **1130**. The system **1100** may be, for example, a personal computer (PC), a server, or any other computer device used for such purposes. The system **1100** may be coupled to a database **1120** containing information on the organization and its suppliers. In this embodiment, the system **1100** has an organization management module **1110**, a program management module **1112**, a project management module **1114** and a delivery management module **1116** for implementing organization management **100**, program management **400**, project management **500**, and delivery management **600**.

[0281] If the computer device **1100** is, for example, a network server, in electronic communication with an electronic network, then users **1160** may be able to use the CMM system **1100** remotely. Referring to **FIG. 11 B** showing the computer device of **FIG. 11A** in electronic communication with a network **1150**. The network **1150**, may be, for example, the Internet, an intranet, an extranet, a Wide Area Network ("WAN"), Virtual Product Network (VPN) and the like. Users **1160** may transmit user input data **1120** to the CMM system **1100** via the electronic network **1150** then obtain a business organization plan **1140** based on the input data **1130**.

[0282] In another embodiment, the CMM system **1100** illustrated in FIGS. **11**A-B, may be a software application designed to operate over various hardware and computer systems, as known in the art.

[0283] Turning now to **FIG. 12**, one embodiment of the present invention implements Method **10** of FIG. through the use of an accelerated process improvement framework system (APIF) **1200** including an enterprise document management system (EDMS) **1210**. The EDMS **1210** is a software application that permits multiple users to store, retrieve, and manipulate electronic documents on a closed client/server architecture network, such as a local area network (LAN) or wide area network (WAN). Known types of EDMS **1210** include DOCSFusion, available from PCDOCS, Inc., Toronto, Ontario, Canada and Enterprise Document Management in the Documentum Suite available from Documentum, Inc., of Pleasanton, Calif. (http://www-.documentum.com). The configuration of these and other document managers function in connection with the techniques of the present invention, and the operation of which will be apparent to one of ordinary skill in the art in view of this disclosure.

[0284] The EDMS **1210** generally includes a digital library repository that creates a document space, which may use a replicated infrastructure for document storage. The repository stores a document as an object that encapsulates the document's content along with its attributes, including relationships, associated versions, renditions, formats, workflow characteristics, and security. These document objects can be infinitely combined and re-combined on demand to form dynamic configurations of document objects that may originate from any source. In this way, the document space supports organization of documents via folder and cabinet metaphors and allows searching over both document content and attributes. The document space also provides check in/checkout-style version control, full version histories of documents, and annotations (each with its own attributes and security rules), and supports workflow-style features including notification of updates.

[0285] Continuing with APIF **1200** in **FIG. 12**, the EDMS **1210** connects to and administers one or more file storage devices **1220**. The file storage devices **1220**, such as various magnetic and optical storage media, are well known technologies and are commonly commercially available. Alternatively, the file storage devices **1220** may be on other LANs and WANs, or may be Storage Area Networks (SANS) or other network-based storage structures. The file storage devices may therefore be positioned at potentially great distances from the user. The user connects to these distant storage devices **1220** via various combinations of connections, networks, webs, intranets, intemets, the Internet, etc. (not illustrated) that are well known in the field of computer communications. For example, the Documentum Suite includes a DocControl Manager that runs on top of the Documentum repository to permit secure management of controlled documents over the Web. Using the DocControl Manager, authorized users may instantly access and view documents using the browser or viewer of their choice. The DocControl Manager thereby allows users to create, review, revise, approve and distribute controlled documents online within an audited environment. In place of elaborate manual processes, users may employ the DocControl Manager to create a Web-driven knowledge chain that links disconnected processes for collecting, sharing, and applying knowledge to meet stringent quality goals and compliance requirements.

[0286] In the present invention, the file storage device **1220** contains files **1222** that store data relating to one or more steps in Method **10** (**FIG. 1**). Thus, when performing a step in Method **10**, a user may select a file **1222** corresponding to that step. The file **1222** may then provide the user with the information and instructions needed to accomplish that step. For instance, the file may direct the user to undertake certain quality control actions during the development of a software application. The file **1222** may further specify documentation that must be completed by the user during the step. In this way, a user may perform Method **10** of **FIG. 1** by opening one or more files **1222**, following the actions specified in the files **1222**, and then, when applicable, completing required documentation specified in the files **1222**. The file **1222** may alternatively instruct the user on the relationship of that step with other steps in Method **10**. In doing so, the file **1222** may direct the user to other, subsequent steps in Method **10** by directing the user to files **1222** corresponding to these subsequent steps.

[0287] Returning to APIF **1200** in **FIG. 12**, a document management tool (DMT) **1230** may operate in conjunction

with the EDMS **1210**. The DMT **1230** maintains and tracks documentation needed for the method being implemented by the user. Documentation is important in many steps of Method **10** because it allows the user to subsequently verify completion of required actions, which the various CMM certifying bodies require before certifying that an organization has achieved higher levels of the CMM. The DMT **1230** works in conjunction with the EDMS **1210**.

[**0288**] In particular, the DMT **1230** allows a programmer to associate required documentation with files **1222** corresponding to steps in Method **10**. A linking attribute may be added to each document object stored within the EDMS **1210** to facilitate association of the documents with objects in the process control system. Once a user selects and opens a file corresponding to a step having required documentation, the DMT **1230**, working together with the EDMS **1210** may automatically present to the user an appropriate documentation form. The DMT **1230** may also present completed examples to assist the user in completing the documentation. In this way, APIF **1200** helps the user to complete the necessary documentation for satisfying the requirements for certification.

[**0289**] Alternatively, APIF **1200** may prevent the user from selecting other files **1222** that lead to additional steps in a process until the required documentation for the current task is completed. This function may be accomplished by altering the document permissions maintained by the EDMS **1210** so that the user cannot access certain files until various conditions are satisfied. While the EDMS **1210** continues to administer storage and retrieval of files, the DMT **1230** affects the ability of the user to access some files until certain conditions are met, i.e., completion of the required documentation.

[**0290**] Turning now to **FIG. 13A**, a document workspace screen **1310** from an EDMS **1210** is shown. In particular, document workspace screen **1310** shows multiple soft "file cabinets," wherein each "file cabinet" stores a different category of documents. In the typical operation of the EDMS **1210**, a user may provide an input specifying one of the files **1222** on the document workspace screen **1310**. In general, the user may perform a mouse click to select a particular file **1222**. In **FIG. 13A**, the document workspace screen **1310** lists several files in the right hand space that are identified by the DMT **1230** as required documentation. As specified above, these files may contain blank forms for the user to complete, instructions aiding the user in completing the forms, or examples of completed forms to which the user may refer when completing the blank form.

[**0291**] Continuing with **FIG. 12**, APIF **1200** may further include a navigator tool **1240** that graphically presents to the user the steps in Method **10** or other processes. In this way, the EDMS **1210** may be configured to further support integration of document management with a process control system. In particular, the navigator tool **1240** creates displays using the data contained in the files **1222** based on the user's inputs. For instance the navigator tool **1240** be an application to create HTML pages whose contains are determined by information in the files **1222**. Likewise, the HTML pages may contain hyperlinks to the information in the files **1222**. The navigator tool **1240** generally functions through the use of navigator data **1250**. In a preferred implementation the navigator data **1250** is an XML data file containing information on file names, file types (or template), whether the file is a standard or modified template, the files' locations, and other information specified by the user. Alternatively, the navigator data **1250** may be a source table in a database or other type of data storage structure. Then, when creating the display, the navigator tool **1240** may access the appropriate file **1222** by referencing the navigator data **1250**. The navigator data **1250** may be stored by the EDMS **1210** along with the files **1222**. If the files **1222** are positioned on a WAN, LAN; or SAN, the navigator data **1250** may be stored on this network as well.

[**0292**] The use of the navigator tool **1240** is illustrated in **FIGS. 13B-13J**. As depicted in a login screen **1320** in **FIG. 13B**, a user, after logging into the EDMS **1210**, may select different processes including, but not limited to, Method **10**. Thus, it should be appreciated that the navigator tool **1240** may be integrated with the EDMS **1210** to assist the user in implementing various other projects and processes other than Method **10**.

[**0293**] Once the user selects a process to implement, the navigator tool **1240** accesses the EDMS **1210** to graphically display the selected process. After the user selects a project, the respective project page appears with the project name in the tool bar. The look and feel of the page produced by the navigator tool is generally similar to a standalone HTML Help-based tool. If only one project existed for the EDMS **1210**, the user may be would be taken directly to that project's home page (i.e., navigator screen **1330** described below), avoiding the login screen **1320**.

[**0294**] Turning now to **FIG. 13C**, a navigator screen **1330** contains a high-level, graphical depiction of Method **10** and generally displays the stages in Method **10**. Each of the stages in the navigator screen **1330** may be hyperlinked to more specific information on the stage. Thus, the user may obtain further information and/or start implementing one of the stages in Method **10** by selecting a box corresponding to that stage. Continuing with **FIG. 13C**, the navigator screen **1330** also graphically displays the relationship between the steps in a process so that the user may discern information about the steps, such as their order and interrelation. The navigator screen **1330** further contains, on the left column, an index of the steps and stages so that the user may easily navigate between steps in the process. This ability is particularly valuable in processes such as Method **10** that potentially require the user to simultaneously perform multiple actions.

[**0295**] As illustrated in **FIG. 13D**, a user's selection of one of the steps in the high-level process display in the navigator screen **1330** leads to a detail navigator screen **1340** containing more detailed information on the selected step. Specifically, the detailed navigator screen **1340** lists the individual actions to be undertaken and the documentation to be completed by the user in that step. As with the navigator screen **1330**, the detailed navigator screen **1340** graphically displays the relationship between various actions and documentation. For instance, the user may see that a certain action must be undertaken before a document may be completed and that other actions may not be initiated until completion of the document. Again, one or more of the boxes in the detailed navigator screen **1340** may be hyperlinked to more specific information contained in the files **1222**.

[0296] For instance, the user's selection (or clicking) of a documentation box causes the navigator tool **1240** to provide more information on that documentation. Specifically, the user's selection of a box to compose a document leads to a documentation screen **1350**, as displayed in **FIG. 13E**. The displayed documentation screen **1350** may contain various information, including a description of the document to be created, an indication of the step(s) of Method **10** associated with the document, and samples of the document to be created. As indicated in the top center, the documentation screen **1350** in **FIG. 13E** may further contain "buttons" or hyperlinked boxes that allow the user to start composing the document (or "deliverable"), to search for existing documents by type, and search for existing documents by file storage location.

[0297] If the user selects the button to compose a document or an equivalent thereof, the navigator tool **1240** produces a composition screen **1360**, as illustrated in **FIG. 13F**. The composition screen **1360** presents to the user a template for the document. The composition screen **1360** generally allows the user to select a template for the document to be created and to specify a name for this the created document. In one implementation, a defaulted storage location, or "path," for the deliverable is determined according to the project and the template type. Specifically, a particular type of documents created for a project may be stored at a particular location. This feature allows the user to easily locate other examples of a document. When the user selects a template for a document, the navigator tool **1240** produces a template screen **1370**, as displayed in **FIG. 13G**, to provide instruction and information to the user regarding the creation of the document.

[0298] The user may also select the "View By Type" button in the documentation screen **1350** of **FIG. 13E**. This selection causes the navigator tool **1240** to create a list of all documents of a specific type (e.g., documents created from the same template) that are stored by the EDMS **1210**. For instance, the type search screen **1380** in **FIG. 13H** displays files related to "project standards procedures policies." In this way, the user may locate examples of a document, even if these examples are associated with a different project or method or are located in different file storage locations. Conversely, the user may select the "View By Location" button in the documentation screen **1350** of **FIG. 13E**. In response, the navigator tool **1240** works with the EDMS **1210** to create a list of documents at the specified location. As described above, similar documents related to a specific process are typically stored in single location. Searching files at a particular storage location thus generally allows the user to examine similar documents pertaining to the same project. In the location search screen **1385** in **FIG. 131**, the navigator tool **1240** displays files related to "project standard procedure policies" located at the path/project one/stage one/step one/document one. If the user knows the name and location for a file, the user may subsequently locate and view the file using the EDMS **1210**, as depicted in the search screen **1390** in **FIG. 13K**.

[0299] In another embodiment, as depicted in **FIG. 14**, a multiple repository APIF system **1400** distributes the documents needed for the Method **10**. As described above, these documents include, for example, instructions for implementing the Method **10** and documentation to evidence actions taken in the Method **10**. The multiple repository APIF system **1400** has a navigator application **1460** (described in greater detail below) that allows a user on the client-side to access documentation and data from multiple data repositories **1440** through a server **1410**. The data repositories **1440** may have different formats and protocols and may be located at different locations. For instance, the data repositories **1440** may be: (1) PVCS or other well known systems of version control and configuration management software; (2) a LAN; (3) an information sharing application, such as Sharepoint® by Microsoft Inc. of Redmond, Wash., that gives users the ability to organize information, readily access that information, manage documents, and enable efficient collaboration; or (4) the above-described EDMS application such as the Documentum.

[0300] The server **1410** generally includes Active Server Pages (ASPs) **1420**. ASPs **1420** is a specification for a dynamically created Web page with a ".ASP" extension that utilizes ActiveX scripting, generally a VisualBasic Script or JavaScript code. When a browser requests an ASP page, the server **1410** generates a page with HTML code and sends it back to the browser. The operation of the ASPs **1420** is described in greater detail below.

[0301] The server **1410** further includes a database engine **1410**. The database engine is well-known technology for organizing, locating, and accessing data contained in the data repositories **1440**. Examples of the database engine include Oracle®, SQL Server®, and Access®.

[0302] The components in the server **1410** use Web-based Distributed Authoring and Versioning (WebDAV) techonology **1450** to coordinate with the different data repositories **1440**. WebDAV **1450** is an extension to HyperText Transport Protocol (HTTP). Specifically, WebDAV **1450** adds new HTTP methods and headers and specifies how to use the new extensions, how to format request and response bodies, how existing HTTP behavior may change, etc.

[0303] HTTP is the standard mechanism by which information is transported over TCP/IP (Transmission Control Protocol/Internet Protocol) compatible networks, such as the Internet, intranets, and extranets. A protocol specifies what occurs in the connections between a client and a server. Basically, the protocol specifies data formats and algorithms so that the client and server can interoperate. HTTP is more specifically an application-level protocol for distributed, collaborative, hypermedia information systems. It is a generic, stateless, protocol that can be used for many tasks beyond its use for hypertext, such as name servers and distributed object management systems, through extension of its request methods, error codes and headers. It is referred to as a transport protocol, since information is transported according to its specifications, and is also referred to as a request-response protocol, since information is exchanged by a client making a request of a server, which generates a response thereto.

[0304] A common use of HTTP is the transport of information formatted according to a markup language. For example, a popular application of the Internet is the browsing of world-wide-web pages thereof. In such instances, typically the information retrieved is in HyperText Markup Language (HTML) format, as transported according to HTTP. However, other standard markup languages are emerging. One such markup language is extensible Markup Language (XML). XML describes a class of data objects that

are referred to as XML documents, and partially describes the behavior of computer programs that process them. A primary difference between HTML and XML is that within the former, information content is intertwined with the layout of the content, making their separation difficult, for example. Conversely, within XML a description of the storage layout and logical structure of content is maintained separate from the content itself. However, both XML and HTML are subsets of a markup language known as Standard Generalized Markup Language (SGML).

[0305] HTTP, and hence XML in the context of HTTP, allows for the access of resources. The term resource refers to any piece of information that has a location described by a Uniform Resource Locator (URL) of the form HTTP:// <domain>. <extension>, where <domain> specifies a particular domain, and <extension> can be, for example, .com, .edu, and net, among others. A resource can be, for example, a Web page, a document, a database, a bitmap image, or a computational object.

[0306] Extensions to HTTP allow for, among other things, the setting and retrieval of properties for resources. A property is specifically a name/value pair that contains descriptive information about a resource. More generally, a property is any information about a resource. Thus, properties provide for the ability to create, remove, and query such information about resources, such as their authors, creation dates, etc. Properties also provide for the ability to link web pages of any media type to other related web pages.

[0307] The goal of WebDAV **1450**, broadly speaking, is to add remote authoring capabilities to HTTP, so that HTTP can be more convenient as a readable and writable collaborative medium, and not necessarily only a browsing medium for web pages. To achieve this goal, WebDAV allows an extended uniform set of functionality to be attached with documents available through a web server. Thus, the WebDAV **1450** protocol allows Web clients to create and edit documents over the Web. WebDAV **1450** also defines collections and a mechanism for associating arbitrary properties with resources. WebDAV **1450** also provides a means for creating typed links between any two documents, regardless of media type where previously, only HTML documents could contain links.

[0308] WebDAV **1450** may operate as a remote file system with extra properties. Specifically, WebDAV extensions may be used to specify an access control list (ACL), a set of data that informs a computer's operating system which permissions, or access rights, that each user or group has to specific system objects, such as directories and file. Each object can then have a unique security attribute that identifies which users have access to it, and the ACL is a list of each object and user access privileges such as read, write or execute.

[0309] WebDAV **1450** works with the file access system in an operating system, such as the Windows Explorer® in Microsoft Windows (D to allow a user to seamlessly access a remote storage device.

[0310] Returning to **FIG. 14**, the operation of the multiple repository system **1400** is now summarized. In operation, a user at the client side uses the navigator application **1460** to access or create a document. The navigator **1460** works with Internet Explorer® browser. For instance, to access and view a document, the user provides some type of input (such as clicking on a desired button) to the navigator application **1460** to specify the document to be viewed. Based on the input, the navigator **1460** forwards information to the server **1410** identifying the document, such as name or type of the document, the software project of interest, and the name of the server storing the document. In response, one of the ASPs **1420** accesses the database engine **1430** to locate the document named in the request. Then, ASP **1420** then connects the user to appropriate the data repository **1440** via WebDAV **1450**. Typically, the user may view a web folder displaying the contents of the data repository **1440**, from which the user may select a desired document via WebDAV **1450**.

[0311] Similarly, to compose a document through a stored template, the user specifies the document to be created through the navigator application **1460**. In turn, the navigator application **1460** forwards to the server **1410** information identifying the document. For instance, the navigator **1460** may forward the name of the document, the project of interest, and server storing the document. In response, one of the ASPs **1420** accesses the database engine **1430** to locate the desired template. The ASP **1420** further creates an entry in the database engine **1430** for the document to be created. The name of the template is then used to build a location for the template, typically in the form of a URL. One of the ASPs **1420** then copies a template from the data repository to a target folder using WebDAV **1450**. An ASP **1420** then forwards a page to the navigator **1460** displaying the target folder with the new document. The user may then open the document through the navigator **1450** to view and edit the template. The navigator **1460** may then forward the document to one of the repositories **1440** via WebDAV **1450**. The database engine **1430** then stores the location for the stored document.

CONCLUSION

[0312] The CMM method of the present invention has been empirically shown to allow organizations to achieve higher levels of CMM hierarchy much more rapidly. On average, an organization or a project within an organization takes about three years to achieve compliance with level 3 of the CMM. In contrast, several projects implementing the CMM in a BOX method **10** of the present invention have reached level 3 of the CMM in an average of nine months. These results suggest the utility and benefit of the present invention in assisting organizations to achieve higher levels of CMM maturity.

[0313] The foregoing description of the preferred embodiments of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. For instance, the method of the present invention may be modified as needed to meet the requirements of new versions of CMM and other maturity models as they are developed. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto. The above specification, examples, and data provide a complete description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

TABLE 1

Document Name (Navigator Item)	Type	Description	Stage	Step
SEPG Project Plan	Template	The SEPG Project Plan serves as a guideline for defining, measuring, and monitoring commitment to quality by all team members on a project. It also identifies the key project roles, responsibilities, and personnel, and houses the project organization chart.	Process Process Process	Plan SEPG Project Execution Organize SEPG Project Resources Control SEPG Project Work
Decision Analysis and Resolution Reference Document	Reference Document	The Decision Analysis and Resolution (DAR) reference document defines DAR and its value, explains the purpose of DAR, identifies typical decisions requiring DAR, describes DAR techniques and artifacts, and provides guidelines for selecting the appropriate DAR technique. It also specifically outlines the process that all projects must follow when performing DAR. In addition, the DAR reference document informs project teams of the various resources available for resolving and analyzing project decisions during all phases of an organization's application lifecycle. Included are sample artifacts that may be created when using DAR.	Process	Plan SEPG Project Execution
SEPG Work Plan	Template	The SEPG Work Plan describes the key deliverables to be produced, the activities to be performed, the estimated effort required, key completion dates. They are produced at the project planning time: either at the end of a preceding phase of work, or during the project definition process. This will be the basis for the project's approach and staffing requirements.	Process Process	Plan SEPG Project Execution Control SEPG Project Work
Communication and Sponsorship Toolkit	Reference Document	The Communication and Sponsorship Plan Toolkit documents the instructions and areas of consideration for the Communication and Sponsorship Plan. The Communication and Sponsorship Plan serves as a guide to the communication and sponsorship efforts throughout the duration of the project.	Process	Plan SEPG Project Execution
Communication and Sponsorship Plan	Template and Sample	The Communication and Sponsorship Plan serves as a guide to the communication and sponsorship efforts throughout the duration of the project. It is a living and working document and should be updated periodically as audience needs change.	Process Process	Plan SEPG Project Execution Control SEPG Project Work
Configuration Management Plan	Template	The Configuration Management Plan applies to all information systems and related system engineering activities that might affect the achievement of a project's effort. This would include hardware, software, and documentation. In particular, the focus of this plan is on the enterprise perspective of configuration management. This plan identifies the need for a configuration management function that will maintain focus on the overall technical and functional objectives of the program. This enterprise configuration management function will also provide the continuous guidance needed to support the delivery of targeted business capabilities. Implementing a configuration management structure will provide senior management with oversight ability.	Process Process	Plan SEPG Project Execution Control SEPG Project Work
Risk Management Plan	Template	The purpose of Risk Management Planning is to focus attention on minimizing threats in the achievement of project objectives. It will provide a systematic approach for identifying and assessing risks, determining cost-effective risk reductions, and monitoring and reporting progress in	Process Process	Plan SEPG Project Execution Control SEPG Project Work

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		reducing risk. All projects must perform risk planning in order to achieve Risk Management Planning objectives. Large projects should create a formal Risk Management Plan, but smaller projects need only to incorporate their risk planning into the Project Plan.		
Training Needs Matrix	Template	The Training Needs Matrix lists the required training by role on a project, and describes the format of each training. It is used as a guide in identifying training needs, and as a tracking mechanism to ensure that project team members receive the necessary training required to fulfill their roles.	Process Process Process	Plan Project Execution Organize Project Resources Control SEPG Project Work
Orientation Binder	Template	The Orientation Binder acts as a key source of information for a new team member. The topics and information provided within the binder will help the new member get acquainted with the project's purpose, administrative processes and programs. Projects are required to create physical binders to hold the information outlined in the orientation binder template and must update the Orientation Binder with applicable project information.	Process	Organize SEPG Project Resources
SEPG Processes & Policies Table of Contents	Template	The SEPG Project Processes & Policies Table of Contents documents the project's formalized policies, standards, and processes. It also indicates the policies, standards, and processes that the project is required to develop.	Process	Organize SEPG Project Resources
Project Processes & Policies	Template	This Project Processes & Policies document is used to record standards and procedures that are specific to a project. Such documents would include the Issue Tracking Process, Risk Tracking Process, New Process Definition Process, all development and testing procedures, etc. See attached samples as a starting point for developing project-specific processes.	Process	Organize SEPG Project Resources
Training Needs Matrix (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
CMMI Awareness Training	Training	The CMMI Awareness Training is a presentation designed to help training attendees understand the CMMI framework and its benefits, understand CMMI Level 2 concepts and examples, and understand CMMI Level 3 concepts and examples. This Training pertains to the Capability Maturity Model - Integrated (CMMI) framework. CMM in a Box is based on the CMMI framework.	Process	Organize SEPG Project Resources
CMMI Awareness for Sponsors Training	Training	The CMMI Awareness for Sponsors Training is a presentation designed to help sponsors understand the CMMI framework and its benefits, understand CMMI Level 2 concepts and examples, and understand CMMI Level 3 concepts and examples.	Process	Organize SEPG Project Resources
SEPG Overview Training	Training	The SEPG Program Overview is a brief presentation designed to help the training attendees understand CMMI and why it is important to the organization as well as understand how the SEPG supports the CMMI.	Process	Organize SEPG Project Resources
Quality Reviews Training	Training	The Quality Reviews Training provides attendees with a definition and purpose for the Software Quality Assurance and Peer Reviews. The training will help to better understand the importance of Quality Reviews, the process to carry out each Quality Review, and understand the roles	Process	Organize SEPG Project Resources

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		and responsibilities for each Quality Review. Contact Resources are included to provide more information for attendees.		
Metrics Training	Training	The Metrics Training will help projects to implement metrics.	Process	Organize SEPG Project Resources
Document Repository Overview	Reference Document	The Document Repository Overview defines a document repository, outlines its purpose, and provides guidance in choosing a document repository for your project/organization. The Document Repository Overview should be utilized when selecting a document repository.	Process	Organize SEPG Project Resources
Issues	Tool	Issue Management is the process of recording, tracking and resolving issues that are impacting the project. Issues are generally problems that involve a significant choice between two or more alternatives for an event that is happening now. Projects should track at minimum the nature of the issue, the impact, priority, status and resolution.	All Stages	All Task Packages
Risks	Tool	Risk Management is the process of recording, tracking, and mitigating risks that may result in issues that affect the project. Risks are situations that could occur and if they do, they would have a significant impact on the project. Projects should track at minimum the nature of the risk, the impact, mitigation approach and final outcome.	All Stages	All Task Packages
SIRs/CRs	Tool	Incident Management is the process of recording, tracking and resolving incidents that impact the project. Incidents include system investigation requests (SIRs) and change requests (CRs). Projects should track at minimum the nature of the incident, the impact, priority, status and resolution.	All Stages	All Task Packages
Agenda/Minutes	Template	The Meeting Minutes/Agenda documents the purpose and content of a meeting, as well as any key meeting outcomes and action items.	Process	Control SEPG Project Work
Individual and/or Team Status Reports	Template	Individual and/or Team Status Reports contain status information from each team member, or for the entire team. This will list accomplishments for the week, tasks for next week, issues, and other information that may be appropriate for status communication.	Process	Control SEPG Project Work
Project Status Reports	Template	The Project Status Report summarizes project status and reports on project metrics, key milestones, effort, issues and risks.	Process	Control SEPG Project Work
Configuration Management Status Report	Template	The Configuration Management Status Report presents a high-level status of CM activities to project management. The Configuration Management status must be reported to project management on a periodic basis as established in the Configuration Management Plan.	Process	Control SEPG Project Work
SEPG Project Plan (shaded for update)	Template	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.
SEPG Work Plan (shaded for update)	Template	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Communication and Sponsorship Plan (shaded for update)	Template	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.
Risk Management Plan (shaded for update)	Template	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.
Configuration Management Plan (shaded for update)	Template	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.
Training Needs Matrix (shaded for update)	Template	See first occurrence of Document at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.	See first occurrence of Navigator Item at the Process Plan and Organize SEPG Stage.
Service Level Agreement	Reference Document	The purpose of this Service Level Agreement is to define the service level and communication requirements between a project and the Software Engineering Process Group (SEPG). This document is presented to the project manager who must agree to and sign before a substantive SEPG support commences. The SEPG will distribute a copy of the Service Level Agreement to the Engagement Partner, while it is the responsibility of the Project Manager to distribute/educate project team members on the contents. The Service Level Agreement provides an overview of estimated time commitments to support execution of SEPG efforts.	Process	Rollout & Support Projects
Tailoring & Waiver Request	Reference Document	The Tailoring & Waiver Request template provides guidance on how a project can tailor the methodology to better suit their needs. It includes guidelines on policy, process, deliverable, and tool tailoring. After reviewing the guidelines, if your project determines that a waiver request form is required, please complete the waiver request form using the "Compose Deliverable" option above.	Process	Rollout & Support Projects
Metrics Workbook	Reference Document	The Project Metrics Workbook template is used as a central repository for the metrics required by the Project Team. The project must complete the Metrics Workbook on a monthly basis and submit it to the SEPG team lead. The Metrics Plan outlines the overall metrics program and provides detailed explanations for each metric included in the Metrics Workbook.	Process	Rollout & Support Projects
Metrics Plan	Reference Document	The Metrics Plan describes the overall approach for identifying, collecting, and analyzing delivery metrics. Projects must use this document to plan for their metrics.	Process	Rollout & Support Projects
Project Management Review Tool	Template	The purpose of the document is to provide information on how to demonstrate each best practice by KPA (Key Process Area). It includes references to templates, job aids and samples deliverables.	Process Project Management	Rollout & Support Projects Plan Project Execution

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Closing Memo	Reference Document	This memo is used to communicate and summarize the project. This memo should include project results, pertinent project metrics including schedule and budget plan versus actual, project successes, and project shortcomings.	Process	Rollout & Support Projects
SQA Debrief	Reference Document	The Software Quality Assurance (SQA) Debrief is conducted at the end of the project. During this meeting, the Software Engineering Process Group (SEPG) project manager gathers metrics on the effectiveness of the SQA process for the project and discusses "lessons learned" with project management executives. The results of the SQA Debrief are used to continuously improve the SQA process, methodology and tools.	Process	Rollout & Support Projects
Super SQA Training	Training	The Super SQA Reviewer Training is a presentation designed to help the SQA Reviewer trainee understand and articulate the Super SQA Process, understand the roles and responsibilities involved in a Super SQA Review, and be able to participate in a Super SQA Review.	Process	Conduct Super SQA Review
SQA Report	Template	The Software Quality Assurance (SQA) Report lists deviations in standard processes and deliverables as listed on the CMM Best Practices matrix. The SQA Reviewer produces this document as a result of the SQA review.	Process	Conduct Super SQA Review
Maturity Questionnaire	Sample	The Software Maturity Questionnaire is a detailed questionnaire to identify respondents, their background information, and to assess the project's maturity level based on responses to questions pertaining to key process areas within the maturity level.	Process	Conduct Assessment
Schedule	Sample	This document can be used as a template to create the Assessment Schedule for the period that the assessors are on the project site, the on-site period (OSP), usually last 5–10 days. Prior to the assessment, a series of training, interviews, documentation review, and consolidation sessions will need to be conducted so that the assessment team can map the existing management and development processes back to the Capability Maturity Model - Integrated (CMMI). This schedule sample outlines a generic OSP agenda.	Process	Conduct Assessment
Logistics	Sample	The Logistics Sample document can be modified to create a logistics checklist for the organization's assessment. It includes room booking, acquiring necessary equipment, catering, accommodations, and building access information.	Process	Conduct Assessment
Participant List	Sample	This sample participant list can be used as a guide in developing a participant list for the organization's assessment.	Process	Conduct Assessment
Assessment Preparation Training	Sample	The Assessment Preparation Training Sample provides an outline that includes the Assessment Purpose & Overview, Roles & Responsibilities, Interviews Do's & Don'ts, Process Assets, Interview Questions, Schedule Logistics, and Questions.	Process	Conduct Assessment
Participant Information Sample	Sample	The purpose of the Participant Information Sheet is to set expectations of the assessment participants as they prepare for the assessment process.	Process	Conduct Assessment
Mini-Appraisal Plan	Template	The purpose of this plan is to outline the of a mini-appraisal process for the organization. This plan documents the goals, objectives,	Process	Conduct Assessment

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		expected outcomes, scope, participants, schedule, and logistics of the evaluation. It also specifies the tailoring of the Standard CMMI Assessment Method for Process Improvement method for the purposes of the mini-appraisal.		
Process Improvement Survey	Reference Document	The Process Improvement Survey should be distributed to all participants to gather information regarding their experience with the Software Engineering Process Group (SEPG). The information gathered from this survey should be used as an input in improving the processes of the Software Process Engineering Group.	Process	Conduct Quarterly Survey
Organizational Design & Development Toolkit	Reference Document	The purpose of the Organization Design and Development (OD&D)Toolkit is to help create, modify, and/or develop organization structures to meet internal and external needs. Depending on the scope of the organization design and development initiative, some or all of the information can be used to facilitate the initiative. The steps within the toolkit provide guidance in planning, designing, and implementing organization design changes. This toolkit includes detailed information for each step of organization design and development. The appendices to the OD&D Toolkit contain sample deliverables and/or templates for many of the steps. Use the templates/samples as a starting point for your own documents.	Personnel Personnel Personnel Personnel Personnel	Identify Organization Strategy Conduct Organization Assessment Design Organization Infrastructure Verify and Validate Organization Structure Design Performance Management Infrastructure Determine Organization Infrastructure Mobilization Approach
Core Competencies	Template	The Core Competencies document lists sample core competencies that will be developed as part of the Organization Design and Development process. A competency is a cluster of related knowledge, skills, and other attributes/abilities associated with high performance on a job. Below is a list of sample competencies. For more information about competencies, see the Organization Design and Development Toolkit.	Personnel	Determine Organization Infrastructure Mobilization Apporach
Guiding Principles	Template	The Guiding Principles should be produced through discussions with members of the organization to reflect the current operation model, organizational values and norms, and business strategies. These guiding principles should be used as guidelines. Think of them as tips on how to ensure that the organization infrastructure design is consistent with the intent of the organization strategy. The guiding principles can be a general list or broken into broad categories.	Personnel	Determine Organization Infrastructure Mobilization Approach
Organizational Design & Development Toolkit	Reference Document	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.
Gap Analysis	Template	The Gap Analysis worksheet is a table used to capture the gap between the current assessment and the desired organization.	Personnel	Conduct Organization Assessment
Organizational Design & Development Toolkit	Reference Document	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in	See first occurrence of Navigator Item in Identify

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
			Identify Organization Strategy.	Organization Strategy.
Competency Model	Template	The Competency Model begins with the Competency Model Name module with the name of the Team Lead. The next module, Team Lead Competency Model, contains a table that illustrates the competencies associated with the "team lead" career field, The competency definitions, and the required proficiency levels for all competencies. The last module, Proficiency Scale, contains a table that illustrates the proficiency level and corresponding behavioral indicators for the problem-solving competency.	Personnel	Design Organization Infrastructure
Role Description	Template	The purpose of this document is to aid in the process of role design that consists of arranging tasks that make up a role in order to maximize the contribution the role makes to the business processes and the agency. Role descriptions should be written concurrently with the design of the competency model. More information about role design can be found in the Organization Design and Development Toolkit.	Personnel	Design Organization Infrastructure
Preliminary Job Description	Template	A job is a group of related roles that defines an individual's place within the organization. The organization design initiative is only tasked with creating the preliminary job description. The final job description will be developed by the offices after implementation based on the level of the employees assigned to each position. Job descriptions should be written concurrently with the design of the competency model. More information about role design can be found in the Organization Design and Development Toolkit.	Personnel	Design Organization Infrastructure
Sample Organization Structures	Sample	This sample document outlines the different Organizational Structure Types and provides samples of each. These include Functional, Process, Product, Matrix, and Customer/Industry-focused.	Personnel	Design Organization Infrastructure
Organizational Design & Development Toolkit	Reference Document	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.
Competency Model (shaded for update)	Template	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.
Role Description (shaded for update)	Template	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.
Preliminary Job Description (shaded for update)	Template	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.	See first occurrence of Navigator Item in Design Organization Infrastructure.
Organizational Design &	Reference Document	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of	See first occurrence of

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Development Toolkit			Navigator Item in Identify Organization Strategy.	Navigator Item in Identify Organization Strategy.
Performance Measurement Toolkit	Toolkit	The purpose of the Performance Measurement (PM) Toolkit is to assist the organization in formulating a performance measurement process to develop goals, measures, and targets of performance that link to the strategic vision, mission, and overall business objectives of the organization. The Performance Measurement Toolkit does not apply to individual measurement. Please refer to the Organization Design and Development Toolkit for more information on individual performance measurement tools and processes.	Personnel	Design Performance Management Infrastructure
Organizational Design & Development Toolkit	Reference Document	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.	See first occurrence of Navigator Item in Identify Organization Strategy.
Training Toolkit	Reference Document	The Training Toolkit will help plan and deliver training to the audience(s) who will use newly identified processes. This will help people to perform their roles effectively and efficiently. The training task for each new initiative is a critical component of preparing employees for change. The Training Toolkit is intended to provide guidance on developing training to "get people started" and to explain "what's new and different"- NOT for developing ongoing training. It is not intended to provide guidance on creating continuing training programs in the organization, even if a need for such training is identified. This toolkit can be used to create short-term, one-time training on the newly defined process(es).	Personnel Personnel Personnel Personnel Personnel Personnel	Conduct Training Needs Analysis Develop Training Plan Design Training Develop Training Deliver Training Provide Post-Implementation Support
Training Needs Analysis	Template	The Training Needs Analysis course is used to prepare instructors for the needs of affected training audiences. It includes a high level training needs analysis by audience or group and a more detailed analysis for individuals.	Personnel	Conduct Training Needs Analysis
Training Toolkit	Template	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.
Training Plan	Template	The Training Plan course is used to prepare instructors how to teach a particular course. It includes training approach, course curriculum, and module descriptions.	Personnel	Develop Training Plan
Training Toolkit	Template	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.
Training Development Standards	Template	The purpose of the Training Development Standards is to ensure that training materials are created with consistent instructional design and development	Personnel	Design Training

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		principles and techniques. This consistent "look and feel" promotes effective learning for training participants.		
Instructor Guide	Template	The Instructor Guide is used to prepare instructors to teach a particular course. It includes a course overview containing objectives, prerequisites, and topic timing. The template is organized in modules that walk the instructor through entire course agenda along with instructor notes.	Personnel	Design Training
Participant Guide	Template	The Participant Guide is used to provide participants with the agenda and presentation information for the course without the instructor notes.	Personnel	Design Training
Training Toolkit	Template	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.
Train-the-Trainer Course Description	Template	The Train-the-Trainer course is used to prepare instructors to teach a particular Course. The Course Description defines the objectives, pre-requisites, expectations, length, and agenda for the training course.	Personnel	Develop Training
Training Development Standards (shaded for update)	Template	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.
Instructor Guide (shaded for update)	Template	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.
Participant Guide (shaded for update)	Template	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.	See first occurrence of Navigator Item in Design Training.
Sign In Sheet	Template	The Sign-In Sheet document can be used to record training attendee information. This document should be used in conjunction with the Develop Training section of the Training Toolkit. Reference the Develop Training section of the Training Toolkit for additional background information regarding The Sign-In Sheet.	Personnel	Develop Training
Course Evaluation	Template	The Course Evaluation document should be used by training attendees who are expected to complete this evaluation at the end of each training session. This document should be used in conjunction with the Develop Training section of the Training Toolkit. Reference the Develop Training section of the Training Toolkit for additional background information regarding the Course Evaluation.	Personnel	Develop Training
Training Toolkit	Template	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of Navigator Item in Conduct Training Needs Analysis.
Training Toolkit	Template	See first occurrence of Navigator Item in Conduct Training Needs Analysis.	See first occurrence of	See first occurrence of

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
			Navigator Item in Conduct Training Needs Analysis.	Navigator Item in Conduct Training Needs Analysis.
Program Business Case Approach	Reference	The objective of the Program Business Case Approach is to define the process for identifying, estimating, documenting, and submitting project initiatives for the upcoming year. First, it defines the process by which the next year's projects are identified. Second, it defines a process to ensure that all costs and benefits associated with the implementation of projects are estimated in a consistent manner. Third, it defines a process to ensure that all business cases are documented and in a consistent manner that allows ease of comparison across projects. And last, it defines the processes for reviewing and submitting the business cases. This process is applicable to all programs and subordinate projects.	Program Management	Justify Program
Program Business Case	Template and Sample	The Program Business Case is to be used in conjunction with the Program Business Case Approach and the Program Business Case Sample. This document is to be used as a template for building a business case while the Program Business Case Sample document provides an example of what the actual Business Case should look like. This document should be used if the organization does not have an existing and well-defined Business Case. In cases where a Business Case already exists, use the existing document.	Program Management Program Management	Justify Program Control Program Work
Program Management Approach	Reference Document	The Program Management Approach reference document describes the various organizational approaches that can be used when operating the program office. This document also identifies the key processes, initiation and start-up activities, deliverables, and general responsibilities of a program office. This document should be used for guidance when developing the Program Plan.	Program Management Program Management Program Management Program Management	Plan Program Execution Organize Program Resources Control Program Work Complete Program
Program Plan	Template	The Program Plan defines the overall management approach and processes for running the program. Written during the planning phase, this document serves as a roadmap for running the program. It includes all major management functions such as program organization, quality, metrics, and reporting.	Program Management Program Management Program Management	Plan Program Execution Organize Program Resources Control Program Work
Program Performance Reporting Approach	Reference	Performance Reporting involves the assessment and documentation of the overall program and each project's performance and progress against the plan. Project status reporting and team member time reporting are critical functions within this process. The purpose of this deliverable is to develop the Performance Reporting process and to record any future changes in direction, scope, or timeframes.	Program Management	Plan Program Execution
Program Financial Management Plan	Template	This document defines the financial controls and processes for the program, including financial management and reporting.	Program Management	Plan Program Execution
Program Resource Management Plan	Template	The Program Resource Management Plan defines the method for sourcing and managing the program's human and physical resources. The objectives include obtaining, preparing, managing, and	Program Management Program Management	Plan Program Execution Organize Program Resources

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		releasing human and physical resources required by the individual project teams on the program, as well as to provide assistance in other human resource concerns.	Program Management	Control Program Work
Program Release Management Approach	Reference	The Program Release Management Approach is a set of guidelines that cover the management approach for defining, planning and delivering releases. Release management is responsible for defining and managing the individual releases as well as the dependencies and interfaces between releases. Although the techniques described in these guidelines are particularly applicable to large, long-term programs of change covering multiple releases, with appropriate scaling they can also be applied to more limited-scope programs or projects. It is important to note that these guidelines specify a generic release management approach. The actual release strategy and the definition of the releases themselves for a given program are contained in the Release Plan, which is a separate, program-specific document.	Program Management	Plan Program Execution
Program Management Approach	Reference	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Resource Management Plan (shaded for update)	Template	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Resource Request	Template	The purpose of the Program Resource Request is to outline the process by which to request resources for a program. This includes request specifications, role and responsibilities requirements, resource preparation, and request approval. When completing the Performance Resource Request, the Program Manager should review the Program Management Approach for input into the request process.	Program Management	Organize Program Resources
Program Plan (shaded for update)	Template	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Management Approach	Reference	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Resource Management Plan (shaded for update)	Template	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Business Case (shaded for update)	Template	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Plan (shaded for update)	Template	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Management Approach	Reference	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.	See first occurrence of Navigation Item.
Program Closeout Report	Template	The Program Closeout Report documents the closure of the program. It includes details of the final disposition of all human and physical resources and describes the archived location of all historical program records that are captured.	Program Management	Complete Program

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Service Level Agreement	Template	The purpose of this Service Level Agreement is to define the service level and communication requirements between a project and the Software Engineering Process Group (SEPG). This document is presented to the project manager who must agree to and sign before a substantive SEPG support commences. The SEPG will distribute a copy of the Service Level Agreement to the Engagement Partner, while it is the responsibility of the Project Manager to distribute/educate project team members on the contents. The Service Level Agreement provides an overview of estimated time commitments to support execution of SEPG efforts.	Project Management	Plan Project Execution
Best Practices Matrix	Reference Document	The purpose of the document is to provide information on how to demonstrate each best practice by KPA (Key Process Area). It includes references to templates, job aids and samples deliverables.	Project Management	Plan Project Execution
Tailoring & Waiver Request	Template	The Waiver Request and Tailoring template provides guidance on how a project can tailor the methodology to better suit their needs. It includes guidelines on policy, process, deliverable, and tool tailoring. After reviewing the guidelines, if your project determines that a waiver request form is required, please complete the waiver request form using the "Compose Deliverable" option above.	Project Management	Plan Project Execution
Metrics Plan	Reference Document	The Metrics Plan describes the overall approach for identifying, collecting, and analyzing delivery metrics. Projects must use this document to plan for their metrics.	Project Management	Plan Project Execution
Project Plan	Template	The Project Plan serves as a guideline for defining, measuring, and monitoring commitment to quality by all team members on a project. It also identifies the key project roles, responsibilities, and personnel, and houses the project organization chart.	Project Management Project Management Project Management	Plan Project Execution Organize Project Resources Control Project Work
Decision Analysis and Resolution	Reference Document	The Decision Analysis and Resolution (DAR) reference document defines DAR and its value, explains the purpose of DAR, identifies typical decisions requiring DAR, describes DAR techniques and artifacts, and provides guidelines for selecting the appropriate DAR technique. It also specifically outlines the process that all projects must follow when performing DAR. In addition, the DAR reference document informs project teams of the various resources available for resolving and analyzing project decisions during all phases of an organization's application lifecycle.	Project Management	Plan Project Execution
Work Plan	Template	The Work Plan describe the key deliverables to be produced, the activities to be performed, the estimated effort required, key completion dates. They are produced at the project planning time: either at the end of a preceding phase of work, or during the project definition process. This will be the basis for the project's approach and staffing requirements.	Project Management Project Management	Plan Project Execution Organize Subcontractor Management Resources
Communication and Sponsorship Toolkit	Reference Document	The Communication and Sponsorship Plan serves as a guide to the communication and sponsorship efforts throughout the duration of the project. It is a living and working document and should be updated periodically as audience needs change. The Communication and Sponsorship Plan	Project Management	Plan Project Execution

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		Toolkit documents the instructions and areas of consideration for the Communication and Sponsorship Plan.		
Communication and Sponsorship Plan	Template and Sample	The Communication and Sponsorship Plan serves as a guide to the communication and sponsorship efforts throughout the duration of the project. It is a living and working document and should be updated periodically as audience needs change.	Project Management	Plan Project Execution
Estimating Worksheet	Sample	The estimating process applies the cost factors against the tailored work plan to produce an estimate of the effort that will be required for a project. The project's overall complexity can also inflate or deflate the project's estimate. This process involves determining the project's complexity, determining the factor values, and applying these values to determine the final estimated project costs in dollars and days. Upon completing a project, the estimating worksheet sheet should be updated based on the actuals that were tracked. This will allow future estimates to be more accurate.	Project Management	Plan Project Execution
Configuration Management Plan	Template	The Configuration Management Plan applies to all information systems and related system engineering activities that might affect the achievement of a project's effort. This would include hardware, software (COTS and/or custom), and documentation. In particular, the focus of this plan is on the enterprise perspective of configuration management. This plan identifies the need for a configuration management function that will maintain focus on the overall technical and functional objectives of the program. This enterprise configuration management function will also provide the continuous guidance needed to support the delivery of targeted business capabilities. Implementing a configuration management structure will provide senior management with oversight ability.	Project Management	Plan Project Execution
Risk Management Plan	Template	The purpose of Risk Management Planning is to focus attention on minimizing threats in the achievement of project objectives. It will provide a systematic approach for identifying and assessing risks, determining cost-effective risk reductions, and monitoring and reporting progress in reducing risk. All projects must perform risk planning in order to achieve Risk Management Planning objectives. Large projects should create a formal Risk Management Plan, but smaller projects need only to incorporate their risk planning into the Project Plan.	Project Management	Plan Project Execution
Training Needs Matrix	Template	The training needs matrix lists the required training by role on a project, and describes the format of each training. It is used as a guide in identifying training needs, and as a tracking mechanism to ensure that project team members receive the necessary training required to fulfill their roles.	Project Management Project Management Project Management	Plan Project Execution Organize Project Resources Control Project Work
Metrics Workbook	Template	The Project Metrics Workbook template is used as a central repository for the metrics required by the Project Team. The project must complete the Metrics Workbook on a monthly basis and submit it to the SEPG team lead. The Metrics Plan outlines the overall metrics program and provides detailed explanations for each metric included in the Metrics Workbook.	Project Management Project Management Project Management	Plan Project Execution Control Project Work Complete Project

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Project Plan (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Project Processes & Policies Table of Contents	Template	The Project Processes & Policies Table of Contents documents the project's formalized policies, standards, and processes. It also indicates the policies, standards, and processes that the project is required to develop.	Project Management	Organize Project Resources
Project Processes & Policies	Template	This document is used to record standards and procedures that are specific to a project. Such documents would include the Issue Tracking Process, Risk Tracking Process, New Process Definition Process, all development and testing procedures, etc. See attached samples as a starting point for developing project-specific processes.	Project Management	Organize Project Resources
Training Needs Matrix (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Issues		Issue Management is the process of recording, tracking and resolving issues that are impacting the project. Issues are generally problems that involve a significant choice between two or more alternatives for an event that is happening now. Projects should track at minimum the nature of the issue, the impact, priority, status and resolution.	All Stages	All Task Packages
Risks		Risk Management is the process of recording, tracking, and mitigating risks that may result in issues that affect the project. Risks are situations that could occur and if they do, they would have a significant impact on the project. Projects should track at minimum the nature of the risk, the impact, mitigation approach and final outcome.	All Stages	All Task Packages
Agenda/Minutes	Template	The Meeting Minutes/Agenda documents the purpose and content of a meeting, as well as any key meeting outcomes and action items.	Project Management	Control Project Work
Individual and/or Team Status Reports	Template	This contains status information from each team member, or for the entire team. This will list accomplishments for the week, tasks for next week, issues, and other information that may be appropriate for status communication.	Project Management	Control Project Work
Project Status Reports	Template	The Project Status Report summarizes project status and reports on project metrics, key milestones, effort, issues and risks.	Project Management	Control Project Work
Configuration Management Status Report	Template	The Configuration Management Status Report presents a high-level status of CM activities to project management. The CM status must be reported to project management on a periodic basis as established in the CM Plan.	Project Management	Control Project Work
Training Needs Matrix (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Requirements Traceability Matrix (shaded for update)	Template	See first occurrence of Navigator Item at the Analysis Stage.	See first occurrence of Navigator Item at the Analysis Stage.	See first occurrence of Navigator Item at the Analysis Stage.
Configuration Audits	Template	The Configuration Audit Template is used to document the conduct of a configuration audit and record the discrepancies and the corrective actions for those discrepancies. The three main components of the audit template describe the project information, lists the components audited, and lists the findings resulting from the audit. All discrepancies	Project Management	Control Project Work

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		must be resolved or answered prior to establishing a new baseline and before the audit can be called complete. Completing the additional comments and issues to consider during next audit sections will prove beneficial in clarifying the table entries.		
Metrics Workbook (Shaded for Update	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Project Plan (shaded for update)	Template	See first occurrence of navigator item.	See first occurrence of navigator item.	See first occurrence of navigator item.
Closing Memo	Template	This memo is used to communicate and summarize the project. This memo should include project results, pertinent project metrics including schedule and budget plan versus actual, project successes, and project shortcomings.	Project Management Project Management Project Management	Complete Project Complete Subcontractor Management Complete Product Acquisition
Metrics Workbook (Shaded for Update	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
SQA Report & Project Response	Template	The Software Quality Assurance (SQA) Report lists deviations in standard processes and deliverables as listed on the CMM Best Practices matrix. The SQA Reviewer produces this document as a result of the SQA review.	Project Management	SQA Review Execution
Business Case	Template	The Business Case provides economic justification for the change journey and for each program within the change journey. The Business Case explains why the sponsoring organization must change, what value it receives by changing, and what steps are necessary for a successful change. The Business Case addresses three main components: (1) business context and change imperatives, (2) value impact analysis, and (3) change journey.	Analysis	Define Business Case
Current Business Assessment	Template	The Current Business Assessment allows for reviewing of the existing system. This makes it possible to identify potential reusable components, required interfaces, and eventually the scope of the required application and its supporting network.	Analysis	Requirements Development & Analysis
Business and User Requirements	Template	The Business and User Requirements document outlines the requirements for design in a structured, top-down manner. The objective is to describe "what needs to be done and/or achieved" and includes general information about the proposed solution, business rules, functions, process flows, and the requirements themselves. This document should map to the application interface requirements and ultimately to the requirements traceability matrix.	Analysis Analysis	Requirements Development & Analysis Assess Deployment Environment
New Business Assessment	Template	The New Business Assessment deliverable identifies the number of users per location that will be using the application. It is required for estimating hardware and software needs.	Analysis	Requirements Development & Analysis
Business and User Requirements (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Peer Review	Template	Moved to Peer Review design matrix.	Moved to Peer Review design matrix.	Moved to Peer Review design matrix.

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Plan Delivery	Task Package	Moved to Commit design matrix.	Moved to Commit design matrix.	Moved to Commit design matrix.
Commit	Template	Moved to Commit design matrix.	Moved to Commit design matrix.	Moved to Commit design matrix.
Application and Interface Requirements	Template	The Application and Interface Requirements document describes the application and interface requirements. It is a further breakdown of the business requirements and includes: general overview of the system, operating environment, system interfaces, and references to the requirements traceability matrix.	Analysis	Identify and Analyze Application and Interface Requirements
Requirements Traceability Matrix	Template	The Requirements Traceability Matrix lists requirements from stakeholders that the solution needs to fulfill. Stakeholders can include: users, customers, suppliers, other systems or client representatives. To demonstrate that all requirements are satisfied, the Requirements Traceability Matrix links requirements back to a solution component(s) or document.	Analysis Project Management	Identify and Analyze Application and Interface Requirements Control Project Work
User and Service Level Requirements	Template	The User and Service Level Requirements document describes the users that the solution will support. It also lists the business and transaction volumes that solution must handle as well as required response times.	Design	Analyze Technology Infrastructure Requirements
Execution/Operations Architecture Requirements	Template	The Execution/Operations Architecture is a collection of services and control structures that support the solution. It is an intermediate layer between the application and the operating system software. The Execution/Operations Architecture Requirements deliverable lists the requirements for the execution/operations architecture.	Design	Analyze Technology Infrastructure Requirements
Technology Selection Matrix	Template	The Technology Selection Matrix categorizes requirements for the technology infrastructure, lists options for satisfying each requirement category and lists the recommended solution including the rationale for its selection.	Design	Analyze Technology Infrastructure Requirements
Development Architecture Requirements	Template	The purpose of the development architecture is to support the tasks involved in the analysis, design, construction, and maintenance of the solution, as well as the associated management processes. The Development Architecture Requirements deliverable lists the requirements for the development architecture.	Design	Analyze Technology Infrastructure Requirements
Technology Infrastructure Scope	Template	The Technology Infrastructure Scope consists of a graphical representation of the scope of the technology infrastructure. It depicts the technology components that make up technology infrastructure and will ultimately support the solution, including links to external systems and peripherals.	Design	Analyze Technology Infrastructure Requirements
Technology Blueprint	Template	The Technology Blueprint provides a high-level view of the technical infrastructure necessary to enable the business objectives. This document should outline the general design for the execution, development and operations environments.	Design Design	Select and Design Execution/Operations Architecture Select and Design Development Architecture
Execution/Operations Architecture Component Design	Template	The Execution/Operations Architecture Component Design deliverable documents the sub-processes and interfaces necessary for a component to meet the specified requirements. The design covers custom components as well as packaged and reuse component extensions for the execution/operations architecture. A	Design	Select and Design Execution/Operations Architecture

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		document should be created for each development architecture component deliverable.		
Execution/Operations Architecture Physical Model	Template	The Execution/Operations Architecture Physical Model shows the actual components comprising the execution/operations architecture and their relative location and interfaces. Interfaces across architectures should also be reflected (e.g., operations architecture interfaces to execution). Moreover, the model will depict the platforms on which the components will reside as well as the distribution across the environment.	Design	Select and Design Execution/Operations Architecture
Execution/Operations Architecture Test Plan	Template	The Execution/Operations Architecture Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Design	Select and Design Execution/Operations Architecture
			Build and Test	Build and Test Execution/Operations Architecture
Execution/Operations Architecture Test Conditions	Template	The Execution/Operations Architecture Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the architecture requirements.	Design	Select and Design Execution/Operations Architecture
			Build and Test	Build and Test Execution/Operations Architecture
Execution/Operations Architecture Test Scripts	Template	The Execution/Operations Architecture Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Design	Select and Design Execution/Operations Architecture
			Build and Test	Build and Test Execution/Operations Architecture
Execution/Operations Architecture Test Results	Template	The Execution/Operations Architecture Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Design	Select and Design Execution/Operations Architecture
			Build and Test	Build and Test Execution/Operations Architecture
Execution/Operations Architecture Test Data	Template	The Execution/Operations Architecture Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Design	Select and Design Execution/Operations Architecture
			Build and Test	Build and Test Execution/Operations Architecture
Technology Blueprint (Shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Development Architecture Component Design	Template	The Development Architecture Component Design deliverable documents the sub-processes and interfaces necessary for a component to meet the specified requirements. The design covers custom components as well as packaged and reusable component extensions for the development architecture. A document should be created for each development architecture component deliverable.	Design	Select and Design Development Architecture
Development Architecture Physical Model	Template	The Development Architecture Physical Model shows the actual components comprising the development architecture and their relative location and interfaces. Interfaces across architectures should also be reflected (e.g., operations architecture interfaces with development). Moreover, the model will depict the platforms on which the components will reside as well as the distribution across the environment.	Design	Select and Design Development Architecture

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Overall Testing Approach	Template	This Deliverable documents the various stages involved in testing. A Testing Approach consists of Test Objectives and Scope, Test Overview, Deficiency Tracking Approach, Regression Testing Approach, Test Environment, and Risk Management.	Design	Select and Design Development Architecture
			Design	Plan Testing Approach
Development Architecture Test Plan	Template	The Development Architecture Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Design	Select and Design Development Architecture
			Build and Test	Build and Test Technology Infrastructure
Development Architecture Test Conditions	Template	The Development Architecture Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the architecture requirements.	Design	Select and Design Development Architecture
			Build and Test	Build and Test Technology Infrastructure
Development Architecture Test Scripts	Template	The Development Architecture Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Design	Select and Design Development Architecture
			Build and Test	Build and Test Technology Infrastructure
Development Architecture Test Results	Template	The Development Architecture Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Design	Select and Design Development Architecture
			Build and Test	Build and Test Technology Infrastructure
Development Architecture Test Data	Template	The Development Architecture Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Design	Select and Design Development Architecture
			Build and Test	Build and Test Technology Infrastructure
Conceptual Design	Template	The Conceptual Design deliverable, often called the operational concept, describes the key functional and interface requirements for the work product. This document addresses the design method, functional and data requirements, screen design, report design, interfaces, and data conversion at a high level. The details will be expanded later in the general design and detailed design documents.	Design	Design Application Architecture
General Design	Template	The General Design deliverable describes an independently compiled entity, composed of three basic components: formal parameters, local variables, and a complete body of logic. Also known as Programs, Components, or work Units, Modules are packets of grouping all the information necessary to code a portion of an application. It also provides a graphical display of the logical components of a module. Items displayed include Inputs, Outputs, Functional Description, and Interfaces.	Design	Design Application Architecture
Interface Agreement	Template	The Interface Agreement describes the business units or systems associated with an interface and outlines the expectations of the parties developing the various units. This deliverable addresses the handling of change requests, data exchange and control, backup and recovery requirements, error handling procedures, and provides escalation procedures in the event of a conflict.	Design	Design Application Architecture

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Interface Design	Template	The Interface Design Approach is used to outline the process of transferring data in and out of a system. It should include the following features: Interface Execution - The ability to launch interface processes and record information about the processing of those interfaces. File Transfer - A method to transfer the file securely from sending system to receiving system. Error Processing - The process of capturing information about errant data or a process failure in the transfer of data. Restart/Recovery - The ability to restart an interface that encountered errors during processing. Archiving - The storage of interface files for backup and recovery purposes.	Design	Design Application Architecture
Assembly Test Plan	Template	The Assembly Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Design Build & Test	Design Application Architecture Build and Test Application
Assembly Test Conditions	Template	The Assembly Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the application and interface requirements.	Design Build & Test	Design Application Architecture Build and Test Application
Assembly Test Scripts	Template	The Assembly Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Design Build & Test	Design Application Architecture Build and Test Application
Assembly Test Results	Template	The Assembly Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Design Build & Test	Design Application Architecture Build and Test Application
Assembly Test Data	Template	The Assembly Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Design Build & Test	Design Application Architecture Build and Test Application
Logical Data Model	Tool	The first iteration of database design for a system. This model includes the entities, keys and relationships as well as a first cut at attributes. This deliverable is typically developed using data modeling tools such as ERWin or Oracle Designer.	Design	Design Database
Data Dictionary	Template	This document supports the logical data model and describes the entities and attributes for the logical data model.	Design	Design Database
Database Configuration	None	Defines the details of the actual database installation configuration including sizes and locations for databases.	Design	Design Database
Database Definition	Template	This document identifies a database, which makes up part of the Physical Database Design. It captures the key aspects of the database, such as the various components: tables, indexes, views, and tablespaces. Optionally, it may include description of the disk configuration, sizings, placement, and segment management strategies. Create this document as an entry point for referencing all the components that belong to this database.	Design	Design Database
Database Space Worksheet	Template	This document describes in detail the assumptions and formulas used to calculate the space requirements for a database. The appropriate formulas for calculating the space requirements are based on the type of database defined. In order to use document	Design	Design Database

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		database space requirements effectively, a database expert should be consulted to obtain the appropriate formulas.		
Database to File Mapping	Template	The Database to File System Mapping document defines the sizing estimates for application data as well as for the database components that facilitate rollback and recovery activities. This document is a component of a Physical Database Design. Use this document when designing the physical space considerations for the database. This document should also be used when planning and executing the technical infrastructure product test and the application product test to monitor and optimize system performance.	Design	Design Database
Relational Index Definition	Template	This document defines the physical index that provides an access path onto a relational table. It defines the columns that constitute the access path. For all applications using relational databases, use the Relational Index Definition deliverable to describe the characteristics of an index of the table. This document is typically created by a Technical Analyst or Database Administrator (DBA) or Data Administrator (DA).	Design	Design Database
Tablespace Definition	Template	This document describes the rational for the physical database design by defining the Tablespace of this database and should give context to the database so technical staff can understand the database design. Use this template to document Tables. Additional information to document: Physical Storage Strategy, Data Partitioning Strategy, Freespace Strategy, and Locking Strategy.	Design	Design Database
Conversion Approach	Template	The Conversion Process outlines the approach to executing both the data conversion and the system rollout. A summary of the functionality to be delivered, the strategies and timelines for delivering that functionality, and the impacts to the organization will outline the rollout segment. Data conversion will be covered by identifying what data needs to be converted, along with outlining the procedures that will be followed in converting that data and the controls that will be in place to ensure the quality and continuity of the data conversion. Finally, any risks and/or assumptions that may impact the conversion approach will be identified along with mitigation strategies and contingency plans for each.	Design	Design Database
Conversion Mapping	Template	This deliverable will identify which source system fields(s) will be used to populate target system field(s). Any logic used to translate or reformat source system information into target system information will also be included.	Design	Design Database
Overall Testing Approach (shaded for update)	Template	See first occurrence of Navigator Item on Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item on Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item on Design Technology Infrastructure design matrix.
Execution/ Operations Architecture Detailed Design	Template	The Execution/Operations Architecture Detailed Design is used to document the detailed design specifications for the execution architecture components.	Build and Test	Build and Test Execution/ Operations Architecture
Execution/ Operations Architecture Guide	Template	The Execution/Operations Architecture Guide is a spreadsheet that tracks the inventory of Execution Architecture components.	Build and Test	Build and Test Execution/ Operations Architecture

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
API Documentation	Template	Typically API documentation comes from the vendor. If API's are developed internally proper coding standards should be followed.	Build and Test	Build and Test Execution/ Operations Architecture
Execution/Operations Architecture Test Plan (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Execution/Operations Architecture Test Conditions (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Execution/Operations Architecture Test Scripts (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Execution/Operations Architecture Test Results (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Execution/Operations Architecture Test Data (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Development Architecture Detailed Design	Template	The Development Architecture Detail Design is used to document the detailed design specifications for the development architecture components.	Build and Test	Build and Test Development Architecture
Development Architecture Guide	Template	The Development Architecture Guide is a spreadsheet, which tracks the inventory of Development Architecture components.	Build and Test	Build and Test Development Architecture
Development Architecture Test Plan (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Development Architecture Test Conditions (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Development Architecture Test Scripts (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology	See first occurrence of Navigator Item in Design Technology Infrastructure

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
			Infrastructure design matrix.	design matrix.
Development Architecture Test Results (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Development Architecture Test Data (shaded for update)	Template	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.	See first occurrence of Navigator Item in Design Technology Infrastructure design matrix.
Deployment Approach	Template	This document describes how the major activities of deployment will be performed. Such activities include: data conversion, policy and procedures deployment, workforce transition, risk management and activation of the business capabilities.	Build & Test	Deployment Planning
Operations Manual	Template	This documents the guiding principles of the operational environment. Typically this document would describe responsibilities, batch and online processing, system availability and security.	Build & Test	Deployment Planning
Disaster Recovery Plan	Template	This deliverable serves as a reference document in the event of a disaster. It is intended to reduce confusion and provide assistance in recovering the business functions as quickly as possible.	Build & Test	Deployment Planning
Deployment Test Plan	Template	The Deployment Test Plan documents the specific steps in the deployment test process. It includes descriptions of the test processes or passes, the cycle definitions and entry and exit criteria.	Deployment Build & Test	Activate and Verify Deployment Deployment Planning
Deployment Test Conditions	Template	The Deployment Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the requirements.	Deployment Build & Test	Activate and Verify Deployment Deployment Planning
Deployment Test Scripts	Template	The Deployment Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Deployment Build & Test	Activate and Verify Deployment Deployment Planning
Deployment Test Results	Template	The Deployment Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Deployment Build & Test	Activate and Verify Deployment Deployment Planning
Deployment Test Data	Template	The Deployment Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Deployment Build & Test	Activate and Verify Deployment Deployment Planning
Online Detailed Design	Template	The Online Detail Design provides an overview of the components necessary for online development. It contains information that a programmer would need to successfully do his/her job. This will include standard naming conventions; the names of libraries or directories where files or test data may be found; a team contact list or a technical support contact list. Diagram flows, process flows and any general design changes will be included. A document describing expected results and space to provide actual results will	Build & Test	Perform Application Detailed Design

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		be included, along with a time line indicating when the work is to be completed will be included.		
Report Detailed Design	Template	The Report Detail Design provides an overview of the components necessary for creating reports. There exist notes for the programmer, including general design changes. There are process flows that describe how the reports are created, such as, where the information comes from that populates the reports, the format of the report and the program(s) used to create the reports. Information describing how often the reports are produced (daily, weekly, monthly, etc.) may be included also.	Build & Test	Perform Application Detailed Design
Interface Agreement (shaded for update)	Template	See first occurrence of navigator item on the item on the Design Application stage.	See first occurrence of navigator item on the Design Application stage.	See first occurrence of navigator item on the Design Application stage.
Interface Detailed Design	Template	The Interface Detail Design provides an overview of the Interface components and their functionality. There exists a process flow that visually shows each component and how the components fit together. There is a written description of each component, its functionality, how it receives information, processes it, and passes it on. Also included are programmer's notes; the names of stored procedures that may be used; and any issues that need to be known.	Build & Test	Perform Application Detailed Design
Component Test Plan	Template	The Component Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Build & Test Build & Test	Build & Test Application Perform Application Detailed Design
Component Test Conditions	Template	The Component Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the requirements.	Build & Test Build & Test	Build & Test Application Perform Application Detailed Design
Component Test Scripts	Template	The Component Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Build & Test Build & Test	Build & Test Application Perform Application Detailed Design
Component Test Results	Template	The Component Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Build & Test Build & Test	Build & Test Application Perform Application Detailed Design
Component Test Data	Template	The Component Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Build & Test Build & Test	Build & Test Application Perform Application Detailed Design
Stored Procedures	Template	Documents the SQL that is utilized to access one or more databases from multiple locations	Build & Test	Build and Test Application
Shells	Template	Shells are the coding templates used for stored procedures or functions so that all code is in a standardized format.	Build & Test	Build and Test Application
Source Code	Template	Source Code is developed for the project based on the projects standards and coding shells. It is a piece of software that meets all design and requirements and is completely tested and documented.	Build & Test	Build and Test Application

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Component Test Plan (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Component Test Conditions (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Component Test Scripts (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Component Test Results (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Component Test Data (shaded for update)	Template	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.	See first occurrence of Navigator Item.
Assembly Test Plan (shaded for update)	Template	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.
Assembly Test Conditions (shaded for update)	Template	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.
Assembly Test Scripts(shaded for update)	Template	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.
Assembly Test Results (shaded for update)	Template	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.
Assembly Test Data (shaded for update)	Template	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.	See first occurrence of Navigator Item in Design Application design matrix.
SIRs/CRs	Tool/ Template	See first occurrence of Navigator Item in Project Management design matrix.	See first occurrence of Navigator Item in Project Management design matrix.	See first occurrence of Navigator Item in Project Management design matrix.
Business Policies & Procedures	Template	This document consists of rules governing work within the organizations (policies) and the workflow for executing these rules (procedures). Business policies and procedures often drive creation of user procedures, or step-by-step instructions for users to integrate business rules and application steps, documented in job aids and/or online quick reference (OLQR) tools.	Built & Test	Develop Policies and Procedures

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Product Test Plan	Template	The Product Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Build & Test	Prepare & Execute Application Product Test
Product Test Conditions	Template	The Product Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the application and interface requirements.	Build & Test	Prepare & Execute Application Product Test
Product Test Scripts	Template	The Product Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Build & Test	Prepare & Execute Application Product Test
Product Test Results	Template	The Product Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Build & Test	Prepare & Execute Application Product Test
Product Test Data	Template	The Product Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Build & Test	Prepare & Execute Application Product Test
SIRs/CRs	Template	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.
User Acceptance Test Plan	Template	The User Acceptance Test Plan documents the specific steps in the testing process. It includes descriptions of the test processes or passes, the cycle definitions, the phase containment criteria, the use of the testing database and configuration management for version control.	Build & Test	Prepare & Execute User Acceptance Test
User Acceptance Test Conditions	Template	The User Acceptance Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the user requirements.	Build & Test	Prepare & Execute User Acceptance Test
User Acceptance Test Scripts	Template	The User Acceptance Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Build & Test	Prepare & Execute User Acceptance Test
User Acceptance Test Results	Template	The User Acceptance Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Build & Test	Prepare & Execute User Acceptance Test
User Acceptance Test Data	Template	The User Acceptance Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Build & Test	Prepare & Execute User Acceptance Test
SIRs/CRs	Template	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.
Deployment Test Plan (shaded for update)	Template	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Deployment Test Conditions (shaded for update)	Template	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.
Deployment Test Scripts (shaded for update)	Template	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.
Deployment Test Results (shaded for update)	Template	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.
Deployment Test Data (shaded for update)	Template	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.	See first occurrence of navigator item on the Build & Test App design matrix.
SIRs/CRs	Template	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.	See first occurrence of navigator item in Project Management stage design matrix.
Sign-off Sheet	Template	The Sign-off document contains the signatures of the project manager and project sponsor (client), indicating whether or not the given deliverable has been accepted.	Commit	Sign-off
Subcontractor Selection Criteria	Template	The Subcontractor Selection Criteria documents the criteria used to evaluate subcontractors. This deliverable should be used to summarize and compare the subcontractors' ability to satisfy the selection criteria. The use of this document will ensure the subselection process is an orderly, well-defined process, that leads to a "best-fit" and best value" subcontractor solution to meet the project's needs.	Supplier Agreement Management Supplier Agreement Management	Plan Subcontractor Management Organize Subcontractor Management Resources
Subcontractor Management Plan	Template	The Subcontractor Management Plan captures all activities relating to the project's management of subcontractors. The plan serves as a guideline to assist project management in defining, measuring, and monitoring commitment to quality by all subcontractors assigned to the project. This plan is not intended for subcontractors who will work directly on the project team. Subcontractors that function as part of the project team should be addressed in the project plan.	Supplier Agreement Management Supplier Agreement Management	Plan Subcontractor Management Organize Subcontractor Management Resources
Statement of Work	Reference Document	The project should use this space to store the agreed upon statement of work.	Supplier Agreement Management	Plan Subcontractor Management
Work Plan (shaded for update)	Template	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Subcontractor Selection Criteria (shaded for update)	Template	See first occurrence of navigator item.	See first occurrence of navigator item.	See first occurrence of navigator item.
Subcontractor Management Plan (shaded for update)	Template	See first occurrence of navigator item.	See first occurrence of navigator item.	See first occurrence of navigator item.
Subcontractor Status Report	Template	The Subcontractor Status Report is to be completed by the subcontracting organization. It presents the status of a subcontractor's activities to project management at a high level. It summarizes status of the task order and provides more detailed information for incidents, scope impacts and deliverable schedules only when project management attention is needed. The Subcontractor Status Report template should be customized by the project based on the contract with the subcontractor to capture the desired information. The status report cannot require the subcontractor to provide status reporting beyond what is detailed in the task order.	Supplier Agreement Management	Control Subcontractor Management
Closing Memo (shaded for update)	Template	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.
Product Selection Approach	Template	The Product Selection Approach provides an approach that the project will follow to select the best fit product (i.e. software, hardware) for the project. The approach will cover the following key tasks: (1) identify and list viable products from the marketplace, (2) narrow the list to a handful of finalists based on screening criteria, and (3) select the best solution for the client through comprehensive questionnaires and business scenarios.	Supplier Agreement Management	Plan Product Acquisition
Product Selection Criteria	Template	The Product Selection Criteria deliverable is used throughout the Product Selection process. Initially, the Product Selection Criteria should be used to list the key requirements that any candidate product must meet to become a final candidate, such as the desired high-level functional, technical, vendor, and quality criteria for products. These criteria will be input to the RFI, RFP and vendors will be screened against these criteria and against each other. Once the long list of vendors and products have been screened and reduced to a short list, the criteria will be refined to define the selection criteria upon which the final product will be selected.	Supplier Agreement Management Supplier Agreement Management	Plan Product Acquisition Organize Product Acquisition Tasks
Product Selection Criteria (shaded for update)	Template	See first occurrence of navigator item.	See first occurrence of navigator item.	See first occurrence of navigator item.
Vendor Response to Business Scenarios	Template	The Vendor Response to Business Scenarios document identifies the overall internal and external operations and business scenarios of the project. This document should be used to describe the key scenarios in which the product will have to perform. The document will be used to perform assessment of the product "finalist" against the scenarios.	Project Management	Organize Product Acquisition Tasks
Product Acceptance Test Plan	Template	The Product Acceptance Test Plan documents the specific used by the project to test the product prior to final acceptance from the vendor.	Supplier Agreement Management	Control Product Acquisition

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
Product Acceptance Test Conditions	Template	The Product Acceptance Test Conditions describe the conditions by which the product will be tested. The conditions map directly to the product selection criteria.	Supplier Agreement Management	Control Product Acquisition
Product Acceptance Test Scripts	Template	The Product Acceptance Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Supplier Agreement Management	Control Product Acquisition
Product Acceptance Test Results	Template	The Product Acceptance Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Supplier Agreement Management	Control Product Acquisition
Product Acceptance Test Data	Template	The Product Acceptance Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Supplier Agreement Management	Control Product Acquisition
Product Performance Test Plan	Template	The Product Performance Test Plan documents the specific steps used by the project to ensure the performance of the product meets the specified requirements.	Supplier Agreement Management	Control Product Acquisition
Product Performance Test Conditions	Template	The Product Performance Test Conditions describe the conditions by which the component will be tested. The conditions map directly to the product selection criteria.	Supplier Agreement Management	Control Product Acquisition
Product Performance Test Scripts	Template	The Product Performance Test Scripts define the steps to be followed by the testing executor to test the conditions that have been identified. The scripts are instructions that are clear, unambiguous and repeatable in manner.	Supplier Agreement Management	Control Product Acquisition
Product Performance Test Results	Template	The Product Performance Test Results describe the actual results of the test and any issues or lessons learned from the test effort.	Supplier Agreement Management	Control Product Acquisition
Product Performance Test Data	Template	The Product Performance Test Data is the data used as input to test the conditions. The data is used in conjunction with the test scripts to validate that the conditions are being met accurately and as required.	Supplier Agreement Management	Control Product Acquisition
Closing Memo (shaded for update)	Template	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.	See first occurrence of navigator item on Project Management stage design matrix.
SIRs/CRs	Tool	See first occurrence of Navigator Item in Project Management design matrix.	See first occurrence of Navigator Item in Project Management design matrix.	See first occurrence of Navigator Item in Project Management design matrix.
Tracking Tool Installation Guide	Reference Document	The Tracking Tool Installation Guide outlines the steps to take when installing any of the various tracking tools including the Issues, Risk, and SIRs/CRs tools.	Process	Organize SEPG Project Resources
SEPG Project Processes & Policies	Template	The SEPG Project Processes & Policies document is used to record standards and procedures that are specific to a project. Such documents would include the Issue Tracking Process, Risk Tracking Process, New Process Definition Process, all development and testing procedures, etc. See attached samples as a starting point for developing project-specific processes.	Process	Organize SEPG Project Resources
CMM Awareness Training	Training	The CMM Awareness Training is a presentation designed to help training attendees understand the CMM framework and its benefits, understand CMM Level 2 concepts and examples, and understand	Process	Organize SEPG Project Resources

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		CMM Level 3 concepts and examples. This Training pertains to the Capability Maturity Model (CMM) for Software only, not to CMM-Integrated (CMMI) framework. This training does not cover aspects of CMMI that are not common with the CMM for Software. CMM in a Box is based on the CMMI framework.		
CMM to CMMI Transition Training	Training	The CMM to CMMI Transition Training is a presentation that focuses on the transition from the Capability Maturity Model (CMM) for Software to CMM - Integrated (CMMI). The training provides generic examples of the difference between the models and what new processes have been added to CMMI. CMM in a Box is based on the CMMI framework. It is designed to help the training attendees understand the transition from Capability Maturity Model (CMM) to Capability Maturity Model - Integrated (CMMI) and how the new CMMI requirements are being implemented within the organization.	Process	Organize SEPG Project Resources
CMMI for Sponsors Training	Training	The CMMI Awareness for Sponsors Training is a presentation designed to help sponsors understand the CMMI framework and its benefits, understand CMMI Level 2 concepts and examples, and understand CMMI Level 3 concepts and examples.	Process	Organize SEPG Project Resources
Tracking Tool Design Document	Reference Document	This purpose of the Tracking Tool Design document is to provide design information for projects who wish to customize the tracking tools. The primary audience would be the Access developers doing the modifications. This document provides design information for the forms, events, macros, queries and reports for the Issue Tracking Tool and System Investigation Request (SIR) & Change Request (CR) Tracking Tool.	Process	Organize SEPG Project Resources
Service Level Agreement Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. The purpose of this Service Level Agreement is to define the service level and communication requirements between a project and the Software Engineering Process Group (SEPG). This document is presented to the project manager who must agree to and sign before a substantive SEPG support commences. The SEPG will distribute a copy of the Service Level Agreement to the Engagement Partner, while it is the responsibility of the Project Manager to distribute/educate project team members on the contents. The Service Level Agreement provides an overview of estimated time commitments to support execution of SEPG efforts.	Process	Rollout & Support Projects
Tailoring & Waiver Request Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. The Tailoring & Waiver Request template provides guidance on how a project can tailor the methodology to better suit their needs. It includes guidelines on policy, process, deliverable, and tool tailoring. After reviewing the guidelines, if your project determines that	Process	Rollout & Support Projects

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		a waiver request form is required, please complete the waiver request form using the "Compose Deliverable" option above.		
Metrics Workbook Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. The Project Metrics Workbook template is used as a central repository for the metrics required by the Project Team. The project must complete the Metrics Workbook on a monthly basis and submit it to the SEPG team lead. The Metrics Plan outlines the overall metrics program and provides detailed explanations for each metric included in the Metrics Workbook.	Process	Rollout & Support Projects
Metrics Plan Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. The Metrics Plan describes the overall approach for identifying, collecting, and analyzing delivery metrics. Projects must use this document to plan for their metrics.	Process	Rollout & Support Projects
Closing Memo Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. This memo is used to communicate and summarize the project. This memo should include project results, pertinent project metrics including schedule and budget plan versus actual, project successes, and project shortcomings.	Process	Rollout & Support Projects
SQA Debrief Reference	Reference Document	This document is included on the page for reference purposes only. The projects are responsible for completing these documents. Do not download or save from this page, go to the Project Management Stage if you need a copy of this document. The Software Quality Assurance (SQA) Debrief is conducted at the end of the project. During this meeting, the Software Engineering Process Group (SEPG) project manager gathers metrics on the effectiveness of the SQA process for the project and discusses "lessons learned" with project management executives. The results of the SQA Debrief are used to continuously improve the SQA process, methodology and tools.	Process	Rollout & Support Projects
Participant Information	Sample	The purpose of the Participant Information Sheet is to set expectations of the assessment participants as they prepare for the assessment process.	Process	Conduct Assessment
Sample Organization Structures	Sample	This sample document outlines the different Organizational Structure Types and provides samples of each. These include Functional, Process, Product, Matrix, and Customer/Industry-focused.	Personnel Personnel	Verify and Validate Organization Structure Design Organization Infrastructure
Balanced Scorecard	Template	The Balanced Scorecard should be used to integrate financial and operational measures within the organization as a means to focus management on strategy and vision. The Balanced Scorecard documents a set of measures that give top managers a fast but	Personnel	Design Performance Management Infrastructure

TABLE 1-continued

Document Name (Navigator Item)	Type	Description	Stage	Step
		comprehensive view of the business. The Balanced Scorecard has five key elements: Perspectives, Objectives, Metrics, Targets, and Actuals.		
Project Management Review Tool	Reference Document	The purpose of the Project Management Review Tool is to provide information on how to demonstrate each best practice by KPA (Key Process Area). It includes references to templates, job aids and samples deliverables.	Project Management	Plan Project Execution
Orientation Binder	Template	See first occurrence of Navigator Item in the Organizational Management Plan & Organize SEPG design Matrix	See first occurrence of Navigator Item in the organizational Management Plan & Organize SEPG design Matrix	See first occurrence of Navigator Item in the Organizational Management Plan & Organize SEPG design Matrix
SQA Debrief	Template	The Software Quality Assurance (SQA) Debrief is conducted at the end of the project. During this meeting, the Software Engineering Process Group (SEPG) project manager gathers metrics on the effectiveness of the SQA process for the project and discusses "lessons learned" with project management executives. The results of the SQA Debrief are used to continuously improve the SQA process, methodology and tools.	Project Management	Complete Project
Peer Review	Template	Moved to Peer Review design matrix.	Moved to Peer Review design matrix.	Moved to Peer Review design matrix.
Plan Delivery	Task Package	Moved to Commit design matrix.	Moved to Commit design matrix.	Moved to Commit design matrix.
Commit	Template	Moved to Commit design matrix.	Moved to Commit design matrix.	Moved to Commit design matrix.
Database Configuration	None	The Database Configuration defines the details of the actual database installation configuration including sizes and locations for databases. This information can be obtained from the database design tool.	Design	Design Database
Conversion Process	Template	The Conversion Process document outlines the approach to executing both the data conversion and the system rollout. A summary of the functionality to be delivered, the strategies and timelines for delivering that functionality, and the impacts to the organization will outline the rollout segment. Data conversion will be covered by identifying what data needs to be converted, along with outlining the procedures that will be followed in converting that data and the controls that will be in place to ensure the quality and continuity of the data conversion. Finally, any risks and/or assumptions that may impact the conversion approach will be identified along with mitigation strategies and contingency plans for each.	Design	Design Database

What is claimed:

1. A system for accelerating process improvement, the system comprising:

a data storage device for storing one or more files related to a method for accelerating process improvement, the method comprising a step for managing an organization developing a product, a step for managing a project for developing said product, and a step for managing the delivery of said product; and

a data management system for administering said files.

2. The system of claim 1 wherein said method further comprising a step for managing a program for implementing said method.

3. The system of claim 1 wherein one of said files contains information related to creating a document associated with said method.

4. The system of claim 3, wherein said information includes instructions on creating said document.

5. The system of claim 3, wherein said information includes an example of said document.

6. The system of claim 1 further comprising a document management tool, wherein said document management tool associates a document with a step in said method.

7. The system of claim 1 further comprising a navigator tool for graphically displaying one or more steps in said method.

8. The system of claim 7 further comprising navigator data related said files, said navigator data used by said navigator tool.

9. The system of claim 1 further comprising:

a plurality of data storage devices;

and said data management system for administering said files further comprising a server wherein said server includes a database engine for storing the location of said files.

10. The system of claim 9 further comprising a navigator application that accepts an input from a user identifying one of said files and connects the user to that file.

11. The system of claim 10 wherein the server uses WebDAV to allow said user to connect to said plurality of data storage devices.

12. A method for accelerating process improvement, the method comprising:

storing data related a step for managing an organization developing a product, a step for managing a project for developing said product, and a step for managing the delivery of said product; and

administering said data using a document management system.

13. The method of claim 12 further comprising:

associating a document with one or actions in said step for managing an organization developing a product, said step for managing a project for developing said product, or said step for managing the delivery of said product.

14. The method of claim 12 further comprising:

graphically displaying one or actions in said step for managing an organization developing a product, said step for managing a project for developing said product, or said step for managing the delivery of said product.

15. The method of claim 12 wherein the said data is stored on a plurality of data repositories and further comprising the step of allowing a user to access said data repositories using WebDAV.

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